Dialog
11/22/03

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Your SELECT statement is:
   s ((track? or follow? or poll? or record?)(4n)(path or paths or
location? ? or route or routes)(4n)(car or cars or automobile? ? or
vehicle? ? or truck? ?)) and (toll or tolls) and py<=1997

           Items   File
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               6     9: Business & Industry(R)_Jul/1994-2003/Nov 20
               4    13: BAMP_2003/Nov W3
              15    15: ABI/Inform(R)_1971-2003/Nov 20
              30    16: Gale Group PROMT(R)_1990-2003/Nov 21
               1    18: Gale Group F&S Index(R)_1988-2003/Nov 24
Processing
              11    47: Gale Group Magazine DB(TM)_1959-2003/Nov 21
               3    63: Transport Res(TRIS)_1970-2003/Oct
       Examined  50 files
               1    80: TGG Aerospace/Def.Mkts(R)_1986-2003/Nov 21
               4    88: Gale Group Business A.R.T.S._1976-2003/Nov 20
               2   141: Readers Guide_1983-2003/Oct
       Examined 100 files
              44   148: Gale Group Trade & Industry DB_1976-2003/Nov 24
               1   149: TGG Health&Wellness DB(SM)_1976-2003/Nov W1
              16   180: Federal Register_1985-2003/Nov 20
       Examined 150 files
               1   262: CBCA Fulltext_1982-2003/Nov
               1   264: DIALOG Defense Newsletters_1989-2003/Nov 21
               3   275: Gale Group Computer DB(TM)_1983-2003/Nov 21
       Examined 200 files
               3   340: CLAIMS(R)/US Patent_1950-03/Nov 18
               1   342: Derwent Patents Citation Indx_1978-01/20035354
               1   345: Inpadoc/Fam.& Legal Stat_1968-2003/UD=200345
              16   348: EUROPEAN PATENTS_1978-2003/Nov W03
>>>File 349 processing for FOLLOW? stopped at FOLLOWM
>>>File 349 processing for POLL? stopped at POLLOWED
              10   349: PCT FULLTEXT_1979-2002/UB=20031120,UT=20031113
               1   387: The Denver Post_1994-2003/Nov 21
       Examined 250 files
               1   474: New York Times Abs_1969-2003/Nov 21
               1   475: Wall Street Journal Abs_1973-2003/Nov 20
               3   476: Financial Times Fulltext_1982-2003/Nov 22
       Examined 300 files
               9   484: Periodical Abs Plustext_1986-2003/Nov W3
               1   486:  Press-Telegram_1992- 2003/Nov 20
               1   487: Columbus Ledger-Enquirer_1994-2003/Nov 21
               4   492: Arizona Repub/Phoenix Gaz_19862002/Jan 06
               3   494: St LouisPost-Dispatch_1988-2003/Nov 20
               1   498: Detroit Free Press_1987-2003/Nov 21
               2   536: (GARY) POST-TRIBUNE_1992-1999/Dec 30
               1   542: SEC Online(TM) 10-K Reports_1997/Sep W3
               6   545: Investext(R)_1982-2003/Nov 22
       Examined 350 files
               5   553: Wilson Bus. Abs. FullText_1982-2003/Oct
               3   570: Gale Group MARS(R)_1984-2003/Nov 24
               3   608: KR/T Bus.News._1992-2003/Nov 22
       Examined 400 files
               1   619: Asia Intelligence Wire_1995-2003/Nov 21
               4   621: Gale Group New Prod.Annou.(R)_1985-2003/Nov 24
               2   624: McGraw-Hill Publications_1985-2003/Nov 21
               5   631: Boston Globe_1980-2003/Nov 21
               1   633: Phil.Inquirer_1983-2003/Nov 18
               4   634: San Jose Mercury_ Jun 1985-2003/Nov 21
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             5   635: Business Dateline(R)_1985-2003/Nov 20
            39   636: Gale Group Newsletter DB(TM)_1987-2003/Nov 21
             4   637: Journal of Commerce_1986-2003/Nov 24
             1   638: Newsday/New York Newsday_1987-2003/Nov 20
             2   641: Rocky Mountain News_Jun 1989-2003/Nov 19
             3   642: The Charlotte Observer_1988-2003/Nov 21
             1   645: Contra Costa Papers_1995- 2003/Nov 19
             1   646: Consumer Reports_1982-2003/Oct
             5   647: CMP  Computer Fulltext_1988-2003/Nov W3
             9   649: Gale Group Newswire ASAP(TM)_2003/Nov 19
             2   652: US Patents Fulltext_1971-1975
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            27   654: US Pat.Full._1976-2003/Nov 18
             1   674: Computer News Fulltext_1989-2003/Nov W2
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             1   696: DIALOG Telecom. Newsletters_1995-2003/Nov 21
             3   702: Miami Herald_1983-2003/Oct 24
             1   704: (Portland)The Oregonian_1989-2003/Nov 21
             2   706: (New Orleans)Times Picayune_1989-2003/Nov 21
             6   707: The Seattle Times_1989-2003/Nov 21
             2   708: Akron Beacon Journal_1989-2003/Nov 21
             1   709: Richmond Times-Disp._1989-2003/Nov 18
             1   711: Independent(London)_Sep 1988-2003/Nov 22
             1   713: Atlanta J/Const._1989-2003/Nov 22
             1   714: (Baltimore) The Sun_1990-2003/Nov 21
             4   716: Daily News Of L.A._1989-2003/Nov 21
             3   717: The Washington Times_Jun 1989-2003/Nov 20
             2   718: Pittsburgh Post-Gazette_Jun 1990-2003/Nov 22
             6   719: (Albany) The Times Union_Mar 1986-2003/Nov 21
             2   721: Lexington Hrld.-Ldr._1990-2003/Nov 21
             2   722: Cincinnati/Kentucky Post_1990-2003/Nov 20
             1   724: (Minneapolis)Star Tribune_1989-1996/Feb 04
             1   726: S.China Morn.Post_1992--2003/Nov 21
            16   727: Canadian Newspapers_1990-2003/Nov 22
             1   728: Asia/Pac News_1994-2003/Nov W3
             1   731: Philad.Dly.News_1983- 2003/Nov 18
             3   732: San Francisco Exam._1990- 2000/Nov 21
             1   733: The Buffalo News_1990- 2003/Nov 20
             2   738: (Allentown) The Morning Call_1990-2003/Nov 21
             1   739: The Fresno Bee_1990-2003/Nov 21
             1   741: (Norfolk)Led./Pil._1990-2003/Nov 20
             5   743: (New Jersey)The Record_1989-2003/Nov 21
       Examined 500 files
             1   755: New Zealand Newspapers_1995-2003/Nov 21
             1   763: Freedonia Market Res._1990-2003/Nov
             2   764: BCC Market Research_1989-2003/Nov
             8   765: Frost & Sullivan_1992-1999/Apr
             1   781: ProQuest Newsstand_1998-2003/Nov 22
             1   802: ONTAP(R) Boston Globe_
             7   810: Business Wire_1986-1999/Feb 28
            15   813: PR Newswire_1987-1999/Apr 30
             2   816: Canada NewsWire_1996-1999/Jun 24
       Examined 550 files

   92 files have one or more items; file list includes 551 files.
   One or more terms were invalid in 104 files.

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Set      Items   Description
S1         343   ((TRACK? OR FOLLOW? OR POLL? OR RECORD?)(4N)(PATH OR PATHS
              OR LOCATION? ? OR ROUTE OR ROUTES)(4N)(CAR OR CARS OR AUTOMOB-
              ILE? ? OR VEHICLE? ? OR TRUCK? ?)) AND (TOLL OR TOLLS) AND PY-
              <=1997
S2         256   RD (unique items)
S3         121   ((TRACK? OR FOLLOW? OR POLL? OR RECORD?)(4N)(PATH OR PATHS
              OR LOCATION? ? OR ROUTE OR ROUTES)(4N)(CAR OR CARS OR AUTOMOB-
              ILE? ? OR VEHICLE? ? OR TRUCK? ?)(10N)(TOLL OR TOLLS)) AND PY-
              <=1997
S4          86   RD (unique items)   -Kwc
File   9:Business & Industry(R) Jul/1994-2003/Nov 20
        (c) 2003 Resp. DB Svcs.
File  13:BAMP 2003/Nov W3
        (c) 2003 Resp. DB Svcs.
File  15:ABI/Inform(R) 1971-2003/Nov 20
        (c) 2003 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2003/Nov 21
        (c) 2003 The Gale Group
File  18:Gale Group F&S Index(R) 1988-2003/Nov 24
        (c) 2003 The Gale Group
File  47:Gale Group Magazine DB(TM) 1959-2003/Nov 21
        (c) 2003 The Gale group
File  63:Transport Res(TRIS) 1970-2003/Oct
        (c) fmt only 2003 Dialog Corp.
File  80:TGG Aerospace/Def.Mkts(R) 1986-2003/Nov 21
        (c) 2003 The Gale Group
File  88:Gale Group Business A.R.T.S. 1976-2003/Nov 20
        (c) 2003 The Gale Group
File 141:Readers Guide 1983-2003/Oct
        (c) 2003 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2003/Nov 24
        (c)2003 The Gale Group
File 149:TGG Health&Wellness DB(SM) 1976-2003/Nov W1
        (c) 2003 The Gale Group
File 180:Federal Register 1985-2003/Nov 20
        (c) 2003 format only The DIALOG Corp
File 262:CBCA Fulltext 1982-2003/Nov
        (c) 2003 Micromedia Ltd.
File 264:DIALOG Defense Newsletters 1989-2003/Nov 21
        (c) 2003 The Dialog Corp.
File 275:Gale Group Computer DB(TM) 1983-2003/Nov 21
        (c) 2003 The Gale Group
File 340:CLAIMS(R)/US Patent 1950-03/Nov 18
        (c) 2003 IFI/CLAIMS(R)
File 342:Derwent Patents Citation Indx 1978-01/20035354
        (c)2003 Thomson Derwent
File 345:Inpadoc/Fam.& Legal Stat 1968-2003/UD=200345
        (c) 2003 EPO
File 348:EUROPEAN PATENTS 1978-2003/Nov W03
        (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20031120,UT=20031113
        (c) 2003 WIPO/Univentio
File 387:The Denver Post 1994-2003/Nov 21
        (c) 2003 Denver Post
File 474:New York Times Abs 1969-2003/Nov 21
        (c) 2003 The New York Times
File 475:Wall Street Journal Abs 1973-2003/Nov 20
        (c) 2003 The New York Times
File 476:Financial Times Fulltext 1982-2003/Nov 22
        (c) 2003 Financial Times Ltd
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File 484:Periodical Abs Plustext 1986-2003/Nov W3
(c) 2003 ProQuest
File 486: Press-Telegram 1992- 2003/Nov 20
(c) 2003 Long Beach Press-Telegram
File 487:Columbus Ledger-Enquirer 1994-2003/Nov 21
(c) 2003 R. W. Page Corp.
File 492:Arizona Repub/Phoenix Gaz 19862002/Jan 06
(c) 2002 Phoenix Newspapers
File 494:St LouisPost-Dispatch 1988-2003/Nov 20
(c) 2003 St Louis Post-Dispatch
File 498:Detroit Free Press 1987-2003/Nov 21
(c) 2003 Detroit Free Press Inc.
File 536:(GARY) POST-TRIBUNE 1992-1999/Dec 30
(c) 2000 POST-TRIBUNE
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File 545:Investext(R) 1982-2003/Nov 22
(c) 2003 Thomson Financial Networks
File 553:Wilson Bus. Abs. FullText 1982-2003/Oct
(c) 2003 The HW Wilson Co
File 570:Gale Group MARS(R) 1984-2003/Nov 24
(c) 2003 The Gale Group
File 608:KR/T Bus.News. 1992-2003/Nov 22
(c)2003 Knight Ridder/Tribune Bus News
File 619:Asia Intelligence Wire 1995-2003/Nov 21
(c) 2003 Fin. Times Ltd
File 621:Gale Group New Prod.Annou.(R) 1985-2003/Nov 24
(c) 2003 The Gale Group
File 624:McGraw-Hill Publications 1985-2003/Nov 21
(c) 2003 McGraw-Hill Co. Inc
File 631:Boston Globe 1980-2003/Nov 21
(c) 2003 Boston Globe
File 633:Phil.Inquirer 1983-2003/Nov 18
(c) 2003 Philadelphia Newspapers Inc
File 634:San Jose Mercury Jun 1985-2003/Nov 21
(c) 2003 San Jose Mercury News
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(c) 2003 ProQuest Info&Learning
File 636:Gale Group Newsletter DB(TM) 1987-2003/Nov 21
(c) 2003 The Gale Group
File 637:Journal of Commerce 1986-2003/Nov 24
(c) 2003 Commonwealth Bus. Media
File 638:Newsday/New York Newsday 1987-2003/Nov 20
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File 641:Rocky Mountain News Jun 1989-2003/Nov 19
(c) 2003 Scripps Howard News
File 642:The Charlotte Observer 1988-2003/Nov 21
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File 645:Contra Costa Papers 1995- 2003/Nov 19
(c) 2003 Contra Costa Newspapers
File 646:Consumer Reports 1982-2003/Oct
(c) 2003 Consumer Union
File 647:CMP Computer Fulltext 1988-2003/Nov W3
(c) 2003 CMP Media, LLC
File 649:Gale Group Newswire ASAP(TM) 2003/Nov 19
(c) 2003 The Gale Group
File 652:US Patents Fulltext 1971-1975
(c) format only 2002 The Dialog Corp.
File 654:US Pat.Full. 1976-2003/Nov 18
(c) Format only 2003 The Dialog Corp.
File 674:Computer News Fulltext 1989-2003/Nov W2

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        (c) 2003 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2003/Nov 21
        (c) 2003 The Dialog Corp.
File 702:Miami Herald 1983-2003/Oct 24
        (c) 2003 The Miami Herald Publishing Co.
File 704:(Portland)The Oregonian 1989-2003/Nov 21
        (c) 2003 The Oregonian
File 706:(New Orleans)Times Picayune 1989-2003/Nov 22
        (c) 2003 Times Picayune
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Set Items Description

S1 29 ((TRACK? OR FOLLOW? OR POLL? OR RECORD?)(4N)(PATH OR PATHS OR LOCATION? ? OR ROUTE OR ROUTES)(4N)(CAR OR CARS OR AUTOMOBILE? ? OR VEHICLE? ? OR TRUCK? ?)(10N)(TOLL OR TOLLS)) AND PY<=1997

S2 28 RD (unique items) -KWIC

File 707:The Seattle Times 1989-2003/Nov 21
(c) 2003 Seattle Times
File 708:Akron Beacon Journal 1989-2003/Nov 21
(c) 2003 Akron Beacon Journal
File 709:Richmond Times-Disp. 1989-2003/Nov 18
(c) 2003 Richmond Newspapers Inc
File 711:Independent(London) Sep 1988-2003/Nov 22
(c) 2003 Newspaper Publ. PLC
File 713:Atlanta J/Const. 1989-2003/Nov 22
(c) 2003 Atlanta Newspapers
File 714:(Baltimore) The Sun 1990-2003/Nov 21
(c) 2003 Baltimore Sun
File 716:Daily News Of L.A. 1989-2003/Nov 21
(c) 2003 Daily News of Los Angeles
File 717:The Washington Times Jun 1989-2003/Nov 20
(c) 2003 Washington Times
File 718:Pittsburgh Post-Gazette Jun 1990-2003/Nov 22
(c) 2003 PG Publishing
File 719:(Albany) The Times Union Mar 1986-2003/Nov 21
(c) 2003 Times Union
File 721:Lexington Hrld.-Ldr. 1990-2003/Nov 21
(c) 2003 Lexington Herald-Leader
File 722:Cincinnati/Kentucky Post 1990-2003/Nov 20
(c) 2003 The Cincinnati Post
File 724:(Minneapolis)Star Tribune 1989-1996/Feb 04
(c) 1996 Star Tribune
File 726:S.China Morn.Post 1992--2003/Nov 21
(c) 2003 South China Morning Post
File 727:Canadian Newspapers 1990-2003/Nov 22
(c) 2003 Southam Inc.
File 728:Asia/Pac News 1994-2003/Nov W3
(c) 2003 Dialog Corporation
File 731:Philad.Dly.News 1983- 2003/Nov 18
(c) 2003 Philadelphia Newspapers Inc
File 732:San Francisco Exam. 1990- 2000/Nov 21
(c) 2000 San Francisco Examiner
File 733:The Buffalo News 1990- 2003/Nov 20
(c) 2003 Buffalo News
File 738:(Allentown) The Morning Call 1990-2003/Nov 21
(c) 2003 Morning Call
File 739:The Fresno Bee 1990-2003/Nov 21
(c) 2003 The Fresno Bee
File 741:(Norfolk)Led./Pil. 1990-2003/Nov 20
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File 743:(New Jersey)The Record 1989-2003/Nov 21
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File 755:New Zealand Newspapers 1995-2003/Nov 21
(c) Fairfax New Zealand Ltd.
File 763:Freedonia Market Res. 1990-2003/Nov
(c) 2003 Freedonia Group Inc.
File 764:BCC Market Research 1989-2003/Nov
(c) 2003 Business Communication Co.
File 765:Frost & Sullivan 1992-1999/Apr
(c) 1999 Frost & Sullivan Inc.
File 781:ProQuest Newsstand 1998-2003/Nov 22

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         (c) 2003 ProQuest Info&Learning
File 802:ONTAP(R) Boston Globe
         (c) 1990 Boston Globe
File 810:Business Wire 1986-1999/Feb 28
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File 816:Canada NewsWire 1996-1999/Jun 24
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2/9/18 (Item 1 from file: 765)
DIALOG(R)File 765:Frost & Sullivan

00255757

FORECASTS OF THE ADVANCED TRAFFIC MANAGEMENT SYSTEMS MARKET: Market Definitions and Overview (2/3)

Main Title: U.S. INTELLIGENT TRANSPORTATION SYSTEM (ITS) MARKETS
Pub. Date: May 1995
Source: Frost & Sullivan
Telephone: US (415) 961 - 1000; London 071 730 3438
Word Count: 427 (1 pp.)
Language: English

The ATMS market segment could be considered in very broad terms, but for logistical reasons, ATMS has been more precisely defined for this study. Specifically, the ATMS market is defined as including:

In-vehicle electronic toll collection equipment
Traffic light control/synchronization systems

Roadside infrastructure directly required for traffic management center (TMC) operations, not including beacons used specifically for advanced traveler information systems (ATIS) transmissions

The figures represent capital expenditures and equipment costs only, with installation, operations and repair expenses not included.

Correctly functioning ATMS should reduce air pollution, fuel consumption, traffic congestion, and travel times. These benefits have been quantified in a number of studies, including an analysis of an improved signal system deployed at 365 intersections in Orlando, Florida. This particular system was estimated to have saved $2.2 million in fuel, reduced vehicle delays 56 percent, and lowered air-pollutants between 9 and 14 percent.

If ATMS is deployed on a substantial scale nationwide, similar benefits are likely to be seen in numerous metropolitan areas, bringing even greater positive results.

Specific systems often use technology originally developed for military applications, such as spread spectrum radio and threat identification systems. These systems were originally used for target identification and other military applications. The technology is well-suited for conversion to transportation end-uses such as automatic **vehicle** identification and traffic congestion **tracking** and **location** .

Electronic **toll** collection (ETC) systems are designed to yield decreases in traffic congestion because **vehicles** need not stop to pay **toll** charges.
ETC systems use automated vehicle identification technologies and operate with either radio frequency, infrared, microwave, or other sensor equipment. In order to operate in all weather conditions, successful systems may also employ a combination of sensor types.

THIS IS THE FULL-TEXT.

00594810/9
DIALOG(R)File 15:ABI/Inform(R)

00594810 92-09983
Intelligent Vehicles, Smart Satellites
Manuta, Lou
Satellite Communications v16n2 PP: 21-24 Feb 1992 CODEN: SACODH ISSN: 0147-7439 JRNL CODE: SAC
DOC TYPE: Journal article LANGUAGE: English LENGTH: 4 Pages
SPECIAL FEATURE: Diagrams
WORD COUNT: 2451

ABSTRACT: Future satellites will play a significant role in traffic management. Intelligent Vehicle Highway Systems (IVHS) are expected to reduce travel time in congested areas by as much as 50% and drop fuel consumption by 10% or more. IVHS refers to the development and application of electronics, communications, or information processing used to improve the efficiency and safety of surface transportation systems. The range of issues covered by IVHS runs from cruise control in today's vehicles to the highways of 30 years in the future, where powerful magnets will transport closely spaced cars at high speeds over long distances. According to Jonathan Arlook, director of software engineering for Navigation Technologies, satellites are a primary component of the Advanced Traveler Information System, and Commercial Vehicle Systems, 2 examples of IVHS. Satellites will be employed for tracking commercial truck fleets, managing traffic, and locating vehicles.

TEXT: Much attention has been focused on ways to aid congested city streets and highways in order to save fuel and time while increasing productivity. Projects are underway to have cars move on high speed interstate roads only inches apart and have computers take over all of the human driver's functions. On-board video screens will someday not only be used to map out trips, but they will constantly update the driver of changes in road conditions due to accidents or heavy traffic to permit the driver to take an alternate route.

Satellites will play a significant role in the future of traffic management and will assist in reaching these goals.

A report released by the Government Accounting Office in May 1991 reveals that effective intelligent vehicle/highway systems (IVHS) could reduce travel time in congested areas by as much as 50 percent, drop fuel consumption ten percent or more through the elimination of delays and stops, and reduce emissions of pollutants from automobiles by up to fifteen percent. Realizing the important benefits to be derived from IVHS, in the highway bill recently signed by President Bush, congress has authorized $659 million for IVHS research. The bill earmarks $94 million in fiscal year 1992 and $113 million per year for fiscal years 1993 through 1997 to support IVHS programs.

BENEFITS OF IVHS

IVHS refers to the development and application of electronics, communications, or information processing which are used to improve the efficiency and safety of surface transportation systems. The range of issues covered by IVHS runs from cruise control in today's cars and signs indicating traffic conditions along roadways to the highways of 30 years in the future where powerful magnets will transport closely-spaced cars at high speeds over long distances.

In a report released by the Federal Highway Administration, the FHWA states that IVHS can alleviate congestion on streets and highways using automated traffic control systems, such as signals, ramp meters, and reversible flow lanes, which are responsive to real-time conditions. Enhanced information can be made available to drivers on traffic incidents (accidents and break downs) and provide alternative route choices through systems both within the vehicles and improved traffic information along roadways. The report also states that highway safety operations can be improved through advisory, warning, and avoidance systems installed in vehicles. In addition, the FHWA believes that the efficiency of trucks and other highway vehicle fleets can be increased through vehicle identification, communications, and safety advisory systems. Finally, research is being conducted to provide safe and reliable vehicle operations at high speeds by fully automating vehicle control or partially automating backup systems for drivers.

According to a study by Mobility 2000, an ad hoc coalition of university, industry, and federal, state, and local government participants, the benefits from IVHS will be received by everyone. For example, the study states that fully deployed Advanced Traffic Management System (ATMS) and Advanced Traveler Information System (ATIS) combinations can reduce congestion costs in urban areas from 25 to 40 percent. ATMS refers to urban traffic control systems, highway and corridor control systems, incident detection systems, and ramp metering systems. ATIS provides the traveler with navigational information and routing advice based on real-time traffic data using audio or visual media contained in the vehicles. The use of this information will allow travelers to be more efficient in the use of the highway network through better route choice.

In addition to reducing traffic, the study envisions the amount of time saved as a result of ATMS and ATIS to grow substantially over the next few years and motor carrier productivity to significantly increase and fuel costs to decrease through automated toll collection, the provision of real-time routing information, and in-vehicle yellow pages services.

THE ROLE OF SATELLITES IN IVHS

According to Jonathan Arlook, director of software engineering for Navigation Technologies, satellites are a primary component of ATIS and Commercial Vehicle Systems. Satellites will be employed for tracking commercial truck fleets, managing traffic, and locating vehicles.

* Vehicle Tracking:

Commercial Vehicle Systems use Qualcomm radio determination satellites to track the location of individual commercial vehicles for national fleet management and automatic toll collection. Two-way messaging with a dispatcher at the trucking company is also possible over satellites.

* Traffic Management:

According to Don Savitt, manager of the advanced traffic management systems (ATMS) for the Hughes Ground Systems Group of General Motors, satellites can also be employed for traffic management purposes. Live surveillance through Very Small Aperture Terminal (VSAT) technology could speed the clearing of traffic incidents.

* Vehicle Location:

The navigation functions of the ATIS are bisected into route planning and calculation/route guidance. Global Positioning Satellites (GPS) are

employed in the guidance system only.

Using spherical geometry, vehicle location can be accurately measured by computing the time it takes for a signal to travel from the GPS satellites to the on-board GPS receiver. The GPS constellation currently has 16 satellites; when complete, the GPS network will include 20 satellites with four backups. While any of the satellites with line-of-sight coverage can be used to determine location, a minimum of three GPS satellites are needed to determine a vehicle's location in two dimensions, latitude and longitude. A fourth satellite can be used to also determine the altitude of the vehicle, which can assist finding the location in areas with varying elevation.
The GPS receiver manufactured by Trimble Navigation Ltd. measures only 2.75 inches by 2.75 inches by .75 inches and, according to director of vehicle tracking and navigation Bruce Noel, "will pick the best geometry of satellites that will give the best location information." Noel informs Satellite Communications that the GPS receiver alone "costs in the several hundred dollar range."

When the vehicle is traveling in an area with tall buildings (concrete canyons), dense trees, or a tunnel, more than three satellites are recommended to ensure the accuracy of the location since at least one satellite may be obstructed. In these situations, on-board systems called dead reckoning and map matching can extrapolate the vehicle's location based on the last known GPS reading.

Dead reckoning estimates a vehicle's position between known start and destination points based on the direction the vehicle is traveling. It requires a road compass/gyroscope and wheel sensors and is assisted by an on-board map. Accuracy can be hampered when the gyroscope drifts and needs to be recalibrated or when the wheel sensors lose their accuracy in situations where the vehicle is moved without being driven (such as on a ferry). As a result of the dead reckoning becoming inaccurate, map matching compares the information from the onboard map and the compass/wheel sensors to better locate the vehicle.

According to Dr. Jim Rillings, project manager for Travel Technology, or TravTek, the accuracy of GPS is hindered by selective availability. Selective availability is "noise" added to the position signal by the Department of Defense which degrades the accuracy by up to 100 meters for "national security purposes." Trimble has created a process called Differential GPS which is a methodology that corrects errors created by selective availability as well as signal degradation from natural sources, such as tropospheric interference. The Differential GPS computes the exact error and then subtracts the error from the location data received to produce a corrected location.

The cost of using GPS may be seen as prohibitive when the ATIS systems move beyond the experimental phase. It is possible that by that time developments in the accuracy of dead reckoning and map matching algorithms may make its use unnecessary.

IVHS PROGRAMS EMPLOYING SATELLITE TECHNOLOGY

HUGHES' LIVE SURVEILLANCE SYSTEM:
Hughes has entered into a new business venture, employing their knowledge from the aerospace industry, which will perform live surveillance of busy corridors.

Hughes started with the premise that the heart of traffic management is removing incidents in traffic as soon as possible and informing motorists

how to avoid the incident. On long highway systems, the cost of laying cable to perform this service would be astronomical. Hughes has developed a system to perform live surveillance of these roadways with the construction of video cameras and VSATs spaced approximately one-half mile apart. In order to improve their vantage point, the cameras would be mounted on top of signs for exits. Loop data, which counts the number of vehicles moving over a specific site, would be transmitted to the satellite and then to a traffic control center. When it appears that traffic at a particular location is not moving or is traveling unusually slow, the television camera would be turned on at that site to determine the cause of the slowdown in an attempt to immediately rectify the situation. Hughes would employ compression techniques used in their video conferencing business to save money on transponder space for the transmission of the video.

OMNITRACS:

OmniTRACS, manufactured by Qualcomm, has been in operation since 1988 and uses geostationary satellites for two-way data messaging and positioning of nationwide truck fleets. The purpose of OmniTRACS is to permit trucking dispatchers to know the general location of every member of the fleet. This knowledge will help minimize the number of empty loads as trucks that discharge their cargo can be instantly notified to make a new pickup in the same area. It employs QASPR technology, which stands for Qualcomm Automatic Satellite Position Reporting System, and is considered accurate to within 1,000 feet. Since OmniTRACS does not involve specific driving instructions (like ADVANCE) and is primarily employed for general locating, the QASPR technology is considered sufficiently accurate. According to Phil Jenquin, director of marketing for Qualcomm, even though OmniTRACS costs $4,500 per truck, over 22,000 trucks have been equipped nationwide by approximately 140 different trucking companies. Each truck would be equipped with its own keyboard and four-line screen to send and receive messages while the dispatcher would have the messaging equipment as well as QASPR software location equipment.

Dick Bishop, an electronic engineer with the office of IVHS Research for the FHWA, tells Satellite Communications that the use of Low-Earth Orbiting (LEO) satellites in the near future will simplify this type of system, reduce the size of the antenna and receiver, require less power, and in turn, reduce costs. Jenquin adds that employing LEOs "will also permit voice transmission as well as data."

Within the next five years, Qualcomm expects that the trucking company's headquarters will be able to monitor IVHS activities such as automatic truck weighing, toll collection, and permitting with OmniTRACS equipment.

Qualcomm revealed in October a new system called SensorTRACS which can monitor vital information in both the truck and the trailer and transmit the information to the trucking headquarters via satellite. SensorTRACS has three primary components. The trip recording capability checks engine speed and RPM to conserve fuel. Oil pressure and water temperature are monitored in SensorTRACS' diagnostic mode. In addition, the temperature inside a refrigerated trailer can also be observed to ensure that the temperature does not go out of range or shut down completely. SensorTRACS, which requires OmniTRACS equipment to be operational, has already been equipped in over 6,000 trucks.

INTEGRATED RADIO SYSTEM:

The Dallas Area Rapid Transit (DART) will begin installing GPS receivers in its surface transportation fleet in March with a 24 month time frame for completion. The program, entitled Integrated Radio System (IRS), will involve 1,400 vehicles such as buses, vans, and transit police cars. As a

result of glass skyscrapers in the Dallas downtown area blocking GPS signals, IRS will employ conventional methods for tracking as well, such as a program to check the odometer in buses to rectify lapses in the GPS. Paul Ledwitz, manager of communications and signals for DART, states that IRS will enable the city to provide quicker responses for breakdowns, create a more exact bus schedule, provide additional security for passengers and operators, and assist in making management decisions on the needs for more vehicles.

Both Denver and Minneapolis are testing similar transit fleet tracking systems.

ADVANCE AND TRAVTEK:

ADVANCE, the Advanced Driver and Vehicle Advisory Navigation Concept, is a cooperative effort between the Illinois Department of Transportation, Motorola, the Illinois Universities Transportation Research Consortium, and the FHWA. The ADVANCE test involves the largest dynamic route guidance system in the United States and will encompass a 200 square-mile area in the northwest suburbs of Chicago. Driver recruitment is expected to begin in the Spring. Eventually, 5,000 cars are expected to be equipped with the ADVANCE system. The five-year project is expected to cost between $35 and $40 million. Funding will come 50 percent from the FHWA, 25 percent from the state DOT, and 25 percent from the private sector, including the universities and Motorola.

ADVANCE uses in-vehicle navigation and route guidance systems. GPS satellites will be used in conjunction with GPS receivers installed in the vehicles, along with a map of the project area stored in the vehicle, to track the vehicles exact location within the network. Due to the urban environment, ADVANCE will employ between five and six satellites to increase accuracy.

During the trip, route guidance information will be displayed on the video screen in easy to understand visual cues. such as arrows, and a synthesized voice. Current traffic information will be gathered from and transmitted to ADVANCE vehicles over a dedicated RF communications system. The vehicles themselves will be the primary source of real-time traffic information as they will function as roving traffic probes automatically reporting unusual traffic conditions. Two computers at the Traffic Information Center will combine and process the data from the vehicle probes, reports from police and other agencies, and sensors in the roadway in order to determine traffic times and other roadway conditions.

TravTek is similar to the ADVANCE test, but is being conducted in Orlando by General Motors, the American Automobile Association, the FHWA, the Florida Department of Transportation, and the city of Orlando. It will employ 100 rental cars equipped with a GM/Hughes GPS receiver as well as dead reckoning equipment. According to Rillings, there will be 22 hour-a-day satellite coverage and up to five GPS satellites will be used to determine location. The price for a TravTek rental will not be more expensive than other rented cars. TravTek will provide the combination of a freeway management system, vehicle routing and location capability, travel services (such as yellow pages on a video monitor), and two-way communications, to aid motorists within the metropolitan Orlando area. This will be accomplished through the use of in-vehicle equipment, including a video screen, a GPS receiver, a microcomputer, and a radio for data communications. The test is slated to begin in early 1992 and will run for one year.

IVHS GOALS:

1. Reduce Travel Time in Congested Areas
Up to 50%

2. Reduce Auto Pollution

Up to 15%

3. Save Gas Consumption

Up to 10%

03947014/9
DIALOG(R)File 16:Gale Group PROMT(R)

03947014 Supplier Number: 45713678
Smart traffic spies have US covered
New Scientist, p9 .
August 5, 1995
ISSN: 0262-4079
Language: English Record Type: Abstract
Document Type: Magazine/Journal; Academic

ABSTRACT:
Campaigners advocating the right to privacy attended a workshop organized by the Intelligent Transportation Society (ITS) of America. The campaigners claimed that intelligent transport systems make it easier to spy on individuals by gathering too much data on them. Intelligent transport systems are being developed by thousands of companies to track vehicles, control traffic, automate toll payments, and give route information to motorists.

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DIALOG(R)File 88:Gale Group Business A.R.T.S.

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Holt, Dan
Automotive Engineering, v103, n11, p18(1)
Nov, 1995
ISSN: 0098-2571 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1159 LINE COUNT: 00092

ABSTRACT: Advancements in semiconductor technology are necessary to hasten the development of Intelligent Transportation Systems for the 21st century. Among the areas to focus on are traffic management systems, car platooning and location-based positioning. Common components across future systems are a microcontroller, a radio frequency section and processor.

TEXT:

At a recent Motorola meeting, Rajan Kumar, Director, Market Development and Engineering, Intelligent Transportation Systems, SPS World Marketing and Steve Shoap, Field Application Engineer, SPS World Marketing gave a briefing on ITS. Intelligent Transportation Systems (ITS) have been discussed for some time but these individuals put into perspective what electronics will be needed to accomplish the task. The vision of the U.S. DoT and ITS America for the first decade of the 21st century includes traffic management systems, car platooning, electronic toll collection, in-car communication, and a location-based technology with GPS and a cellular link of some type into the automobile. To achieve this vision, a roadmap of some sort must be followed and systems developed along the way. Specifically, three systems - navigation, radar, and toll collection - were discussed from the standpoint of how military-type technology can become practical for commercial use in ITS. A common tie among these systems is that each has a microcontroller, radio frequency section, and processor.

The current market for navigation systems is one-half million units in Japan plus 10,000 split between the U.S. and Europe. In the U.S., the majority of the market is currently commercial vehicles, rental cars, and other select cars. The predicted annual market in Japan is 3 million units with a market value of $490 million. Enablers of the market in Japan are the lack of street names, and the numbers and landmarks being historical rather than sequential. In addition to a road-map type navigation system, the Japanese systems tend to have restaurants, hotels, and other such sites listed. The U.S. and European market enablers will be real-time traffic information. Future additions would be a vehicle tracking system connected into a head-up display and tied to collision avoidance with automatic braking.

Most of the navigation systems will use the Global Positioning System (GPS) which was created by the U.S. government at a cost of $12 billion. GPS accuracy is rated at 100 m with the built-in military error left uncorrected and 30 m if the error is absent. Differential GPS accuracy is 2-10 m and with surveying techniques the accuracy is 1 cm. The total annual market for GPS, including all systems, is predicted to be $790 million by the year 2000. The enablers for this market are size and cost, and there is a fast growth curve.

Looking at automotive navigation systems from an electronics standpoint, signals from the 24 GPS satellites are received by the antenna and RF sections and enter a correlator. Separated signals from each satellite enter the navigation processor, in which latitude and longitude are computed. Digitized maps are contained in a CD-ROM or PCMCIA card. Synthesized speech can give the driver step-by-step turn information. In the future, the driver may be able to give voice commands to the system via

speech recognition circuits.

Automotive radar systems are divided into two types - forward looking and near obstacle detection systems (NODS). Some trucks and buses currently have a rear warning system, with a basic cost of $1500, that uses a light as a warning device. Between the years 1996-2002, the system cost should reach $600-1000 for a system that includes an intelligent or adaptive cruise control. Between 2002-2006, a fully integrated system with intelligent cruise control that is capable of automated collision avoidance in terms of braking, velocity, and lateral control should be available. The enablers are acceptance and technology progression. Other potential uses for radar are pre-collision detection which can be used for air bag deployment, and road condition, chassis height, and ground velocity sensing for ABS and traction control.

From an electronics standpoint, an RF signal is transmitted and then its reflection from a target is received by the RF and IF circuits. After an analog to digital conversion, the digital signal processor computes the velocity of the target via the frequency shift (Doppler effect). In radar measurement systems, a one nanosecond frequency shift translates into 305 mm of distance. A microprocessor is used to classify and track targets and to warn the driver about hazards. The annual market by the year 2000 is $260 million.

Since toll collection on highways often creates bottlenecks, automated toll collection systems are being investigated. If one lumps in radio frequency identification (RFID) and the use of a smartcard with electronic toll collection, the total annual market in the year 2000 is $620 million if German autobahns get into the toll collection business, and $350 million if they do not.

Smartcards are being considered as a single universal card which can be used to pay for tolls, parking, mass transit, vending machines, fuel, and fast-food. Australia is using a similar card today and Europe is trying a version. Dealers and auto manufacturers will be the drivers for RFID in the U.S. Imagine a lot full of snow-covered cars and trying to locate the right ones to ship. With RFID, a bar code on the window could be read through the snow. Also, RFID would allow for the coding of 30,000 components on a car for tracking purposes. Theoretically, one could fly over the car lot and determine its content and exact location. Recalls could be pinpointed to the exact vehicles with the problem components and save both time and money by not having to recall so many vehicles. Dealer service records for individual vehicles could be written into the RFID tag and easily be accessed at various dealer locations if service was required while traveling.

About $23 billion of tolls are being collected worldwide - with the U.S. accounting for 16%, Japan for 64%, and Europe for 20%. Due to the high cost of creating new superhighways, it is thought that developing countries may allow private companies to build and maintain the roads. The roads might well then be paid for by tolls and thus require a faster and better toll collection system. Having a smartcard in the vehicle would allow a driver to pass through the electronic toll booths without stopping to pay the tolls.

In the electronics area, the smartcard I/C is a basic microcontroller unit with additional features to help secure the information in the memory.

With annual car production hovering between 14-15 million vehicles in the U.S. and the number of electronic components per vehicle, one can see why the electronics industry has tremendous growth potential. According to Tom A. Beaver, corporate Vice President and Assistant Director, Motorola SPS World Marketing, billions of semiconductors will be required to power the applications that are already known. The growth of the electronics industry has averaged 17% per year since 1970 and is approaching $300 billion by the year 2000. Is the trillion dollar horizon near? Tom Beaver thinks so!

DESCRIPTORS: Intelligent vehicle-highway systems--Product development
FILE SEGMENT: TI File 148
?

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08318447 SUPPLIER NUMBER: 17830818 (THIS IS THE FULL TEXT)
CONGESTION, LOST PRODUCTIVITY, LOST LIVES CREATES NEED FOR INTELLIGENT TRANSPORTATION
PR Newswire, p1211CLM005
Dec 11, 1995
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 393 LINE COUNT: 00041

TEXT:

COLUMBUS, Ohio, Dec. 11 /PRNewswire/ -- Why is the federal government paying $14 million for a 17-week Intelligent Transportation System demonstration in Atlanta?

The answer is an easy one if you look at the lives and productivity lost in the U.S. each year to traffic congestion and accidents.

"The U.S. Department of Transportation estimates that American industry loses $100 billion dollars a year because of increased traffic congestion," said David J. Mitchell, senior vice president of Battelle's Transportation Division.

"Traffic accidents claim the lives of 40,000 people in the United States each year. Couple that with 5 million injuries from accidents, and you're talking about an incredible number of dead and injured."

Traffic congestion is a problem for anyone who ventures out of their home. Battelle has been assisting the U.S. Department of Transportation and the Federal Highway Administration in developing Intelligent Transportation Systems that will save lives and alleviate congestion, which will in turn increase U.S. productivity.

The Intelligent Transportation Systems that Battelle has worked on include:

-- Automated highways. Vehicles would be programmed automatically before entering the freeway. The driver would then relax while his or her car automatically followed a predetermined route.

-- Automatic tolling booths. Cars will no longer stop at toll booths. Radio transceivers at the toll booths will read a transponder on a vehicle, and the owner will receive a monthly bill.

-- Satellite mapping. Computers in vehicles will take information from satellites, giving drivers such information as their location, the distance to the next exit, and the amenities available at the exit.

-- On-board, compact disk-based navigational devices.

Over the next 20 years, experts expect the U.S. government and private industry to invest $220 billion in Intelligent Transportation Systems.

For more information, contact David J. Mitchell, senior vice president/Transportation Division, Battelle, 505 King Ave., Columbus, Ohio 43201-2693; telephone: 614-424-4929.

Battelle serves industry and government by developing, commercializing, and managing technology. With a wide range of scientific and technical capabilities, Battelle puts technology to work for clients in 30 countries.

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/CONTACT: Robin Yocum, 614-424-5544, or e-mail: yocumr@battelle.org, or Will Kopp, 614-424-7984, or e-mail: kopp@battelle.org, both of Battelle/

00004429/9
DIALOG(R)File 264:DIALOG Defense Newsletters

00004429
COMMERCIAL USE OF GPS
WORLD AEROSPACE WEEKLY
September 25,1992 DOCUMENT TYPE: NEWSLETTER
PUBLISHER: FORECAST INTERNATIONAL DMS
LANGUAGE: ENGLISH WORD COUNT: 926 RECORD TYPE: FULLTEXT

TEXT:
Used In Persian Gulf

The success of the US Air Force's NAVSTAR Global Positioning Satellite (GPS) system during the Persian Gulf War has generated a huge demand for GPS receivers in the civilian marketplace. These units are being incorporated into automobiles, marine vessels, and civilian aircraft.

Space-Based System

The NAVSTAR (Navigation System using Timing and Ranging) GPS system comprises a constellation of over 15 satellites in 12-hour, 55-degree circular orbits. When the GPS constellation is completed in several years (with 21 satellites and three in-orbit spares), the system is expected to provide 24-hour positioning data accurate to 15 meters.

IVHS

Earlier this year, the Intelligent Vehicle-Highway Systems (IVHS) Society of America submitted its Strategic Plan for IVHS to the US Department of Transportation that included plans for guidance research, development, and deployment of IVHS in commercial transportation applications during the next 20 years. The IVHS plan is a collection of technologies such as information processing, communications, control, and electronics, which, when combined in the overall system, will assist drivers through traffic. Some of the systems involve individual vehicles equipped with navigation systems directing drivers to the best possible route. Others are designed with a focus on mass transit, such as equipping buses with sensors to allow central dispatch operators to monitor the buses from computers in their offices.

Test Programs In Operation

Right now, there are some 35 IVHS operational test programs employing GPS for location determination information going on throughout the country. Motorola is working with the Illinois DoT in the Advanced Driver and Vehicle Advisory Navigation Concept (Advance) Program. In this program, private and commercial vehicles are equipped with onboard navigation and route guidance systems using GPS receivers to improve precise location identification.

TravTek

General Motors, the American Automobile Association, the Federal Highway Administration, and the Florida DoT are currently participating in the TravTek Program based in Orlando, Florida. TravTek is a year-long test of the nation's most advanced IVHS and depends on GPS receivers for position determination. So far it has been installed in 75 AAA member rental cars, while 25 cars have been assigned to local high-mileage drivers. Nearly 1,000 people have rented TravTek vehicles since its

launch in March 1992. The test has been so successful that the Institute of Transportation Engineers awarded TravTek the 1992 Transportation Achievement Award.

Reducing Congestion

IVHS Society of America estimates that cities adopting IVHS technologies could reduce their traffic congestion by as much as 20 percent by the year 2011. IVHS could reduce traffic fatalities by eight percent in that period, it said, which translates into 3,300 lives saved and 400,000 injuries avoided each year compared to current levels.

The following services are currently provided by IVHS trial systems in operation:

* Gather and transmit information on traffic conditions and transit schedules for travelers;

* Increase highway capacity by reducing traffic incidents, clearing them more quickly, rerouting traffic, and automatically collecting tolls;

* Assist drivers in reaching their destinations through enhanced navigation systems with path-finding and route guidance; and

* Improve productivity of commercial, transit, and public safety vehicles by using automated tracking and dispatch systems to reroute vehicles.

An Expensive Proposition

Developing and deploying IVHS nationwide during the next 20 years will cost about $215 billion, the IVHS Society of America said, adding that some 80 percent of that cost will have to be paid for by the private sector. In 1991, $660 million was allocated by the federal government for IVHS development under the Internodal Surface Transportation Efficiency Act (ISTEA). Through the ISTEA, Congress requested that the DOT present a plan for IVHS, which in turn recruited the IVHS Society of America to write the strategy. According to IVHS Society of America executive director, Jim Costantino, "The strategic plan will serve as a road map for IVHS development, but it will be a living map that will change as new technologies evolve."

Remapping Potential

Another benefit of GPS technology, and perhaps one of the few positive outcomes from the 1992 summer Los Angeles riots, is the innovative use of GPS to help reconstruct the decimated sections of the city. After the riots, the California State Office of Emergency Services (OES) and the Federal Bureau of Land Management found maps of the city to be far from accurate. To overcome this deficiency, the OES is constructing new maps using the GeoResearch GeoLink system. This system uses GPS-generated position points and advanced software capabilities to produce a precise and detailed map of the entire area. The all-inclusive Los Angeles Riot Map will provide all local, state, and federal agencies involved in the redevelopment program with accurate and fully annotated locations for the destroyed areas. The OES originally undertook a mapping mission in July 1992 using a less powerful system; however, the results were not accurate enough.

"While each agency has its own map of the area, none of the current records are accurate enough to really establish what's out there now, who owns it, and what was there before the riot," said Dave Kehrlein,

OES project coordinator. OES also plans to use this GPS-generated mapping system to help establish effective procedures for responding to other emergency situations such as fires, floods, and earthquakes.

On An Historic Trail

An even more unusual use of GPS is being put to the test in mapping the actual route taken by the historic Lewis and Clack expedition. Sponsored by American Rivers, a non-profit organization, Tom Warren and photographer John Hilton are retracing Lewis and Clark's early trail by jetboat, canoe, and bike to compare campground sites, river beds, water conservation, and environmental concerns. Warren is using the Garmin GPS 100 receiver, the same receiver used by coalition forces in the Persian Gulf War, to pinpoint the campsites described by Lewis and Clark in their journals.

We want to stand on the same sites Lewis and Clark did 190 years ago," said Warren, "and for that, we need GPS to find their original locations." Warren and Hilton expect to finish their journey by mid-fall of 1992, covering in three months the same trip that took Lewis and Clark nearly two and a half years to complete.

06851287/9

06851287

DOWN THE PIKE THE RATIONALE FOR TOLL ROADS: YOU GET WHAT YOU PAY FOR

Phoenix Gazette (PG) - WEDNESDAY, December 16, 1992
By: JOHN SEMMENS
Edition: Final Section: Editorial/Opinion Page: A19
Word Count: 724

MEMO:
MEMO: Semmens is the primary planner for privatization with the Arizona Department of Transportation. The views expressed here are those of the author and do not necessarily reflect department policy. They are taken from a report on highway privatization Semmens wrote for the Goldwater Institute of Arizona.

COLUMN: GUEST VOICE

TEXT:
In the next couple of months we will have the opportunity to make some significant progress toward the completion of the urban freeway system. There are several privatization proposals (one for the Pima Freeway, one for a tolled express lane on I-10, and one for completion of the whole system) on the table. They key to the implementation of any of these proposals is whether local governments are willing to accept them.

Before local governments can be persuaded to accept the idea of toll roads, several key questions will need to be answered.

--> Why do we need toll roads?

Existing taxes will not be sufficient to complete the promised urban freeway system. The half-cent sales tax enacted in 1985 will expire in 2006 with only about 70 miles of the planned 231-mile system completed. Regardless of whether people feel that in some sense they should get 231 miles for their money, the fact is they won't.

The real choice we face at this time is to either settle for the 70 miles that can be built with existing taxes, increase taxes, or charge tolls. There is no costless or painless option.

--> Won't toll roads make us pay twice for the same thing?

If we are to complete the system we will have to pay again. Whether that payment is in the form of higher taxes or tolls is the relevant question. As we have seen, with tax financing all we are guaranteed is the tax; there is no guarantee that the promised roads will actually be built.

With toll-financing, you get what you pay for. No payments are due until the road is built and you use it. This is the ultimate performance guarantee. Payment upon receipt of services is the market's way of ensuring that results are achieved. Unlike traditional tax-financing, you would not have to pay if the roads were not built.

--> Wouldn't paying tolls be time-consuming and inconvenient?

Modern technology makes stopping to pay tolls unnecessary. An electronic device little bigger than a credit card can be carried in the vehicle. This device automatically records the vehicle's travel past the

tolling location. The driver would be able to maintain full freeway speed. Payment would ultimately be made via a credit card or debit card arrangement.

--> Won't tolls add to traffic congestion?

So-called "free" roads provide little incentive for drivers to avoid causing congestion. Consequently, freeways become clogged during rush hours because more than 50 percent of rush hour traffic is not work/home commuting travel. Congestion-priced toll roads could encourage a shift in some non-commuting trips to less busy times of the day. So adding tolls will actually reduce traffic congestion.

--> Can we really afford to not choose the toll road option?

Consider the mess we would be in if we attempted to provide food in the same way we have tried to provide the urban freeway system. Instead of everyone buying their own food, everyone would be taxed and local politicians would decide who gets to eat.

Would we be surprised to find that some would be allowed to over-eat? Would we be surprised to find that a lot of money would be spent on storage space for food that we wouldn't be able to buy because the money ran out? Would we be surprised to find that a lot of food would be improperly prepared, half-baked and missing key ingredients?

This is precisely where we find ourselves now with the freeway program, having spent more than planned on upgrades of the early segments, having accumulated right-of-way that we cannot afford to build on, and having constructed several bits and pieces of unconnected road segments in dispersed parts of the Valley.

If we believe that highways are really investments in the future and we are serious about getting a return on this investment, we need to adopt a cost effective means of making this investment. Toll roads are the best option we have.

DESCRIPTORS: COMMENTARY
?

03321751/9
DIALOG(R)File 553:Wilson Bus. Abs. FullText

03321751 H.W. WILSON RECORD NUMBER: BWBA96071751 (THIS IS THE FULLTEXT)
Faster than rush-hour gridlock! Stronger than a speeding NIMBY! It's ... high-tech super-infrastructure!.
Lyne, Jack
Site Selection (Site Sel) v. 41 (Aug. '96) p. 707-9
DOCUMENT TYPE: Feature Article ISSN: 1080-7799
LANGUAGE: English
COUNTRY OF PUBLICATION: United States
RECORD TYPE: Abstract; Fulltext RECORD STATUS: Corrected or revised record
WORD COUNT: 2046

ABSTRACT: Although invisible infrastructure--such as smart cars and transportation systems--is a new technological development, it has considerable ramifications for business location patterns. For starters, it helps to address the public opposition that often accompanies firms' attempts to expand or locate new facilities. In addition, such leading-edge technology is easing traffic congestion, which represents a considerable business cost. "Intelligent transportation systems" are the best hope for solving the problems of gridlock. The business world's traffic woes could be alleviated by using present technologies and techniques: mass transit, home-based telecommuting, and more managed development. Specific infrastructure advancements are discussed.

TEXT:

You're driving in Boston's Back Bay area, and you -- and your company -- are in big-time trouble.

In 20 minutes, you've got a huge business meeting -- half your firm's annual revenue may be riding on it. And you've just entered ... Infrastructure Hell. Doom sounds on an orange sign bearing perhaps the world's most chilling words: "Under Construction."

You've hit a three-mile (4.8-km.) stretch of road where sewer lines are being replaced. As you mutter foul thoughts, a "Right Turn Only" lane sends your car into the jaws of traffic that could tie you up for hours -- all for a lousy three miles.

And then there's ... nothing. No ghastly orange pylons. No hard-hatted armies. Not even many visible holes -- and they're tiny compared to the Grand Canyons of traditional "cut-and-cover" methods.

The Boston work, it turns out, is primarily underground, largely unseen and unnoticed. As you saunter into your appointment a good 10 minutes early, you offer a quick thanks to the Infrastructure Gods (whether above or below, you're not sure).

FROM 'NIMBY' TO 'NUMBY'

Welcome to the world of high-tech infrastructure. New tools like "microtunneling" and "cured-in-place lining" (see chart) are making infrastructure development a far less fractious process.

But the new "invisible infrastructure" is more than merely non-intrusive. The Boston project will take only 18 months, reports Sewer Commission Chief Engineer John Sullivan Jr. Old methods would've required four or five years, he says.

Invisible infrastructure is a new technological twist, and its long-term effect is very much in a formative state. But it has substantial implications for business location patterns. In today's climate, companies needing new or improved infrastructure to expand or locate new facilities are often stymied by public opposition.

Consider Maine's recently abandoned Sears Island cargo port in

Augusta. Maine voters twice approved project bond issues. But the planned port became submerged in courtroom battles and often volatile public debates, with opposition including the Maine AFL-CIO, the Conservation Law Foundation, the Maine Green Party, the League of Women Voters, the Maine People's Alliance and the Sierra Club -- plus many others.

In theory, everyone favors infrastructure improvements -- better roads and less traffic congestion, safe, plentiful water, and effective waste disposal. "It directly relates to the livability of a city," says Charles McPhee, head of Howard Hughes Corp.'s commercial and industrial marketing and leasing. Without proper infrastructure, business -- and life in general -- rapidly become intolerable and, ultimately, insupportable.

Just ask the 750 employees at Siltec Corp.'s silicon wafer plant in Salem, Ore. A water shortage shut down many local businesses earlier this year.

"Our total losses were $3 million," Environmental and Health Manager Mike Gotterba says. "The availability of pure water is one of the reasons we're here. When we have a situation like this, it's just not okay."

Okay, it's not okay; but when it comes to where to carry out infrastructure projects, ah, there's the rub. Opposition is so commonplace, it has its own well-worn acronym, NIMBY -- Not In My Backyard.

But high-tech infrastructure tools like those used in Boston throw NIMBY a baffling curve ball. Even the most skilled rabble rouser would be hard-pressed to rally opposition under the rubric of NUMBY -- Not Under My Backyard.

GRIDLOCK A 'NO. 1 ISSUE'

Leading-edge technology is also alleviating the traffic congestion bedeviling businesses around the world (see accompanying "Can You Say Global Congestion?"). More than a simple aggravation, gridlock is a substantial business cost.

"It's the No. 1 issue in the business community," says Colorado Interstate Gas Vice President Steve Coffin.

In Denver, for example, the estimated cost of traffic delays in overtime pay and wasted fuel is now more than US$331 per capita, reports the Denver Regional Council of Governments -- more than double 1992's level of $143.

Auto commutes also have a major impact on distribution costs, recruitment and retention, all major bottom-line concerns.

But while costly traffic woes swell, infrastructure funding is drying up in many parts of the world. "We have all the plans we need to carry all the people from where they are to where they want to go," says Rob Kerth, chairman of the Sacramento Area Council of Governments. "We just don't have the money to build the facilities."

Some observers even question whether building new highways will actually put an appreciable dent in steadily accelerating gridlock.

"Building more freeways to solve congestion is like loosening your belt to solve an obesity problem," says Phoenix City Councilman Craig Tribken.

The Phoenix area's Squaw Peak Freeway is an object lesson. When the freeway opened in 1990, traffic engineers predicted that it would carry 75,000 vehicles a day within 20 years -- instead, it took six months. Today, the roadway carries 150,000 vehicles a day.

HOT-WIRING GRIDLOCK

Given those formidable constraints, "intelligent transportation systems" may hold the best hope.

Using technology that the Federal Highway Administration's David Gendell describes as "still in its infancy," Maryland and Virginia are the first U.S. states selected by the federal government to develop high-tech

systems. Those schemes will speed travel for commercial trucks and buses.

Maryland's system uses space satellites to precisely track vehicles' locations. Eventually, trucks and buses will pay some road tolls electronically, eliminating costly stops. Electronic sensors will read identification stickers on vehicles' windshields, billing automatically.

Another technological boost in speeding products to market is unfolding in Oregon. A series of scales are being built into the road beds along some of the state's major highways. The scales will measure moving truck's weight and safety conditions. Only those failing the electronic test will be ordered to stop at inspection stations.

Tempe, Ariz., is one of many cities in the industrialized world installing self-adjusting traffic signals to facilitate flow. If traffic on a particularly route is heavy, the first stoplight's electronic sensors read conditions and adapt for longer green lights. Other signals on the route adjust accordingly.

The "seeing-eye" technology isn't cheap. A similar system at 1,000 traffic signals in Phoenix will cost an estimated $5.5 million. But it's a smart investment, maintains Phoenix Transportation Director Jim Matteson: $5.5 million, he says, would pave only two miles (3.2 km.) of arterial road.

THE STREETS OF LOS ANGELES

Perhaps the world leader in intelligent transportation is Los Angeles, where annual gridlock costs are estimated at $7 billion. Begun as a pilot program at the 1984 Olympics, the city's Automated Traffic Surveillance and Control (ATSAC) system is now in place at 800 intersections. Already benefiting one-third of the city's population, the system will be expanded to all 4,000 signalized intersections by 1998.

ATSAC uses interrelated technologies to analyze and control flow. Buried sensors and remote-control cameras at key intersections collect information fed to computers at ATSAC's Control Center (described by one observer as "looking like something out of NASA").

Transportation engineers flag developing problems, adjust signal timing and search for causes for traffic disruptions (e.g., accidents, stalled vehicles, unexpected heavy volumes). Emergency vehicles are dispatched when needed to clear clogs. Drivers are alerted of quicker alternative routes via radio "traffic watches."

ATSAC has produced impressive results: An estimated 8 million auto stops at red lights have been eliminated, a 41 percent reduction. Air emissions have been cut by 26 percent, fuel consumption by 13 percent. Vehicle delays have dropped by 50,000 hours, a 32 percent reduction.

SMARTER CARS

Technology may not make drivers smarter, but it's upping their autos' traffic IQs. Sixty cars with in-car computers are being used in a pilot project in Phoenix. Traffic information is fed through radio waves onto dashboard-mounted PC screens. The technology costs $1,000, though, and some traffic experts contend that $100 systems using only audio or text are equally efficient.

Many of the business world's traffic woes could be lessened by using existing technologies and techniques: mass transit, home-based telecommuting and more managed development (see this issue's cover story).

But the United States, Henry Ford's home, has been particularly prone to automotive autonomy. Car pooling has steadily dropped over the last 10 years, from 20 percent to less than 13 percent. Baby boomers have exacerbated America's "car culture," says the Phoenix Regional Public Transportation Authority's Kathy DeBoer.

"The goal as you grow up is, when you turn 16, you get a car," DeBoer says. "And now you're asking me to give that up?"

Much of the Asia-Pacific and the European Community have "given that up," creating popular rapid-rail systems that have eased gridlock. Per-capita auto use in much of Western Europe is 20-55 percent below the U.S. level. Canadians also record less than half U.S. per-capita roadway mileage.

But changing deeply ingrained personal driving habits won't happen soon -- if ever. In the short run, technology may provide the best solutions for easing infrastructure strain.

Even technology's most ardent advocates, though, caution against expecting too much. (Remember the once-heralded "paperless office?")

"We must avoid overloading on technology where it isn't needed," says Maryland Highway Administrator Hal Kassoff, a national expert in high-tech traffic solutions. "We must be careful that what we put out there solves a problem.

"I guarantee we will fail in some areas. The key is to minimize mistakes, don't repeat them, and learn from them."

Added material

HIGH-TECH WIZARDRY

Here are a few of the technological tools making infrastructure improvements faster, cheaper and less disruptive.

Microtunneling: Its tiny tunnels mark a huge change from intrusive "cut-and-cover" methods. They're dug by a boring machine at street level, guided by an operator seated at a computer console. Laser beams precisely locate trouble spots.

Pipe Bursting: One-stop destruction/creation: A bullet-shaped, hydraulically powered tool shatters old piping, simultaneously pulling replacement pipes into place.

Cured-in-Place Lining: Pipes with only minor damage are untouched during repairs. Water pumped into felt sleeves inside the pipes is heated, which turns plastic resins in the sleeves into smooth fiberglass lining. Leakage is immediately sealed.

CAN YOU SAY GLOBAL CONGESTION?

The world's astonishing urbanization is not good infrastructure news for business. Prime locations in the developing world will likely be overwhelmed, according to a recent United Nations report.

By 2000, some 3 billion people will live in urbanized areas, the report says. Only 25 years later, the total will skyrocket to 4 billion.

For metros in developing nations, "it will be clearly impossible to keep pace with the need for transportation, sanitation, utilities, schools and hospitals as long as their populations double every 12 to 20 years," says Population Action International, a private advocacy group.

More from the UN report:

China's Crunch: China's explosive growth is overwhelming infrastructure. Roads can't handle auto traffic, much less hordes of horses, mules and tractors, plus millions of bicycles. Daredevil motorists now take any available pavement -- including sidewalks.

Hertz this year will unveil plans to become China's first Western rental car company. But it won't send neophyte drivers into the chaos. "Initially, anything that happens would be a chauffeur-driven service," says a Hertz spokesman.

Mexico City's Lessons: London's population took 130 years to go from 1 million to 8 million. Mexico City took 30 years, then redoubled in 1970-86.

Africa's Explosion: Nigeria's capital of Lagos underlines Africa's urbanization, now the world's fastest: Its 1950 population of 290,000 will total 21 million by 2010.

New York Gets Smaller: Once the world's largest city, New York likely won't make the top 10 by 2025, outstripped by rapidly growing metros like

Jakarta and Buenos Aries.

00171966/9
DIALOG(R)File 608:KR/T Bus.News.

00171966 Story Number: 5201 (THIS IS THE FULLTEXT)
DETROIT FREE PRESS DAN GILLMOR COLUMN
Dan Gillmor
Detroit Free Press
October 18, 1993 13:47 E.T.
DOCUMENT TYPE: Newspaper RECORD TYPE: Fulltext LANGUAGE: English
WORD COUNT: 816

TEXT: Oct. 18--The next time you're stuck in stop-and-go traffic, steaming because you're late, consider the promise of smarter cars and highways. Then consider the possible impact on your privacy.

The idea behind intelligent vehicle highway systems - IVHS, the in-crowd acronym for smart cars and highways - is alluring. By using computers and other electronic gear, we could squeeze many more cars, trucks and buses onto existing highways and help everyone get where they're going more quickly and reliably.

IVHS is just one of the advances in communications and information technology that are transforming our lives. But it also could let government and private snoops peer into our lives in new and scary ways.

"There is a lot of good that can come from IVHS if it's done right, but there's also a need to assure that privacy and individual rights are maintained," says U.S. Rep. Bob Carr, D-Mich., a strong advocate of IVHS.

IVHS isn't a single technology. It's an expanding grab-bag of gadgets, computers and brains. Among them:

An experiment now under way in Oakland County, Mich. Cameras keep track of traffic on major streets. They relay information to a computer that tells the traffic lights when to turn green, yellow and red. The result, according to road officials, is smoother-flowing traffic.

Projects in Europe and Japan. One is Prometheus, a European system designed to help cars avoid collisions, plus in-car computers that give information on how to steer around congestion.

Pathfinder, a California-based car-to-computer communication system that includes dashboard displays about upcoming traffic jams.

Proposals for electronic tolls - what economists and traffic planners generally agree would be an efficient way to reduce congestion and pay for upkeep. The reasoning, which makes sense to me, is that you should pay more to use the highway at rush hour than at 2 a.m. How would that be done? Highway and vehicle sensors, which wouldn't slow traffic like old-fashioned toll booths, would know when you use the road and bill you accordingly.

Those and other emerging IVHS technologies hold out the long-range promise of fully automatic highways and cars: You'd get into your car, tell it where you're going, and the car and the roads would do the rest.

Backers of IVHS include the Big Three automakers, Michigan's state government and its major universities. They see a potential mother lode - much of it likely to be mined from taxpayer's pocketbooks - as well as

public
benefits.

Let's think about this.

Assume for the moment that IVHS actually will work and be affordable.

What worries me, and ought to worry you, is how IVHS could be used to pry into your life. A rule of thumb: The smarter the system, the more Big-Brotherish it could be.

Specifically, the smarter the system, the more easily it'll be able to track your every move.

Oakland County's relatively primitive traffic-control system uses cameras, but officials with the county road commission say the cameras only sense motion. They don't monitor license plate numbers or take pictures of drivers.

Spy on motorists? "We're opposed to it and have no intention of getting into it," insists Brent Bair, managing director of the Road Commission for Oakland County. "We can't afford to get involved in stuff like that."

I believe him. But questions I'm raising aren't about what's here today, but what's coming tomorrow.

Bair thinks I'm being alarmist. I hope he's right. But suppose some future road officials decide to install new cameras and higher-capacity transmission lines, allowing the system to scan locations, license-plate numbers and drivers' faces into the computer.

And what about other IVHS systems that include communications devices in vehicles that talk with a central computer and get instructions on the best route. Will the computer keep records of where the car has been, and when?

These concerns apply to electronic tolls and just about all other IVHS technologies. Will the information be used solely for traffic control and billing? If not, who should have access to it, and for what purposes? We need to answer all of these questions now, not after the fact.

"Most people are honest and wouldn't misuse the information, but we do need protections, just in case," says Dale Rubin, professor of law at Willamette College of Law in Salem, Ore., and the author of several papers on IVHS issues.

I'm no Luddite who fears anything new; IVHS undoubtedly can make our lives better. Still, before we spend a few bazillion dollars on this brave new world of transportation, we should consider just how much liberty we're willing to trade for mobility and convenience.

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02840322/9
DIALOG(R)File 636:Gale Group Newsletter DB(TM)

02840322 Supplier Number: 45759433 (THIS IS THE FULLTEXT)
Air Force Study on the Beam
Advanced Transportation Technology News, v2, n5, pN/A
Sept 1, 1995
ISSN: 1077-6877
Language: English Record Type: Fulltext
Document Type: Newsletter; Professional
Word Count: 448
TEXT:
The Air Force Automatic Identification Technology (AIT) Program Management Office (PMO, 4375 Chidlaw Rd., Suite 6, Wright-Patterson AFB, OH 45433; Tel: 513/257-4118) recently issued the results of its Radio Frequency Identification (RFID) market study.

The PMO sent questionnaires to 24 companies actively involved in the field and received responses from 10, including AT/Comm (Marblehead, MA), Intellitag (Dallas, TX), Texas Instruments (Austin, TX) and SAAB Combitech (Jonkoping, Sweden).

The study introduced the subject with a brief history of the bar code. It noted that while this form of identification is considered a significant contribution to the technology, it requires that labeled objects be located and brought to a reader to be identified. Bar coding does not allow for "self-location."

In covering the next advancement, Radio Frequency Identification (RFID), the report stated that this technology is used in applications that go far beyond the limits of bar codes. RFID labels, known as tags or transponders, can contain varying amounts of information ranging from a permanently stored ID number programmed into the tag at the factory to 128K bytes of read/write memory.

By using RF energy to communicate, information stored in the tag can be altered from a distance, and interrogators can be networked to provide nearly unlimited coverage for a system. Inexpensive read-only tags can be used for short-range applications, e.g., to track items moving through a production cycle.

Longer range tags are finding many applications in transportation. The study specifically mentioned vehicle identification and automatic toll collection and referred to the tagging of rail cars to provide real-time location information. It also cited trucking companies using these systems to track both vehicles and freight shipments.

The report said small, short range tags can cost up to $20. Longer range read-only backscatter devices may cost from $10-$30, while read/write backscatter versions could run from $30-$75. Active read/write tags (battery required) are in the $55-$200 range, depending on features and memory amounts needed.

Interrogator unit costs vary from $500 for short range use to $2000 for an active tag interrogator, and up to $8,000 for a backscatter interrogator.

At the time the study was being conducted, only one ANSI/ISO standard for RFID tags was in place and it applied to intermodal containers. Now two other national standards are in the making. These include a standard for Automatic Vehicle Identification (AVI) developed by ASTM, and a generic active RFID standard being developed by the X3T6 Committee of ANSI. California has published its own standard for AVI applications, and Kansas requires the California standard for use in its automatic toll collection system on the Kansas Turnpike.

06738417/9

06738417 SUPPLIER NUMBER: 14542419 (THIS IS THE FULL TEXT)
Paving the road toward smarter highways, autos. (Special Report: Automotive)
Clarke, George L.
San Diego Business Journal, v14, n40, p19(2)
Oct 4, 1993
ISSN: 8750-6890 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 1248 LINE COUNT: 00100

TEXT:

California has been a national leader in transportation technology since the beginning of the freeway construction era. The foresight of the road designers of the 1930s and '40s helped create systems that have been expanded for decades. The designers' forward-thinking ideas have helped lay the groundwork for computer-driven "smart" highways and cars.

The challenge now is to continue building on the vision of those designers and bring Southern California's transportation system into the 21st century. The Automobile Club of Southern California believes the vision for our nation's freeways and cars is to make them "smarter" by increased use of current and new computer technology.

Much of the technology for smart cars and highways already exists. Many freeways have traffic-sensing systems, electronic message signs and some automatic toll-collection systems. Many late-model cars have their engine and braking systems controlled by computers. Just look at the popularity and effectiveness of cruise control and anti-lock brakes.

San Diego is taking a lead in smart-highway technology with the construction of a Traffic Management Center, which is expected to be operational by the end of the decade. This center is part of a comprehensive traffic management plan that will cover 211 miles of San Diego County freeways at a cost of about $73 million. The plan is designed to significantly reduce freeway congestion, improve air quality and increase freeway capacity.

Under the current freeway system, the state Department of Transportation estimates that San Diego motorists experience 5 million vehicle hours of delay each year while traveling on local freeways, and this number is expected to triple by the year 2005. Under the proposed plan, a reduction of 5.5 million vehicle hours is expected, with corresponding reduction in fuel consumption and accidents.

Traffic Management

San Diego's traffic management plan will provide information to motorists through the use of 15 changeable message signs that display up-to-date traffic information; underpavement detectors installed on freeway lanes to identify locations of traffic congestion; closed-circuit television located at major interchanges to aid in the assessment of traffic tie-ups; a ramp metering system installed at 170 additional locations in the county; and an increased use of in-vehicle computers.

Creating smarter cars and highways has great potential for reducing or even eliminating traffic accidents, increasing highway capacity and reducing delays. Such systems could double or even triple capacity on the current freeway system and still help everyone move faster. Benefits would also extend to increased safety for pedestrians, improved air quality, potential fuel savings and more mobility for older and physically disadvantaged motorists.

It is estimated that just the simpler forms of smart cars and highways, such as on-board navigation systems, could cut traffic congestion by 15 percent, and fully deployed systems could cut it by 40 percent. Full automation could virtually eliminate traffic congestion. In fact, it is

already being predicted that, by the year 2025, a substantial portion of Southern California's freeways will have fully automated lanes -- a system known as "hands off" driving where the road effectively drives the car.

Much of the technology needed to make smart cars and highways a reality was developed through years of research in the defense and aerospace industries. The challenge now is to reassemble the technology in a package suitable for transportation. Such a conversion to the consumer market could provide a much needed economic boom to the San Diego area, for many of the major companies and laboratories that would be affected are located here. Meanwhile, the testing of these systems continues.

In San Diego, an ongoing experiment using smart cars has taken place in the car pool lanes on the 1-15 freeway. In this experiment, four-car "platoons" travel at or above freeway speed limits and at close intervals to test how swiftly, closely and safely groups of cars can operate. The cars in the platoon are linked constantly by radar and maintain spacing in a convoy despite changes in speed and acceleration.

In this type of system, the smart cars are able to automatically apply the brakes or even stop to avoid a collision. The platooning experiment could also help drivers stay within a lane and maintain a safe distance from other vehicles.

Another example of smart-car technology is the recently completed "TravTek" experiment in central Florida, in which General Motors, the Federal Highway Administration and the American Automobile Association worked in partnership. Tourists and business travelers who rented one of the 100 custom-equipped General Motors vehicles furnished with on-board computers were provided navigation assistance, up-to-the-minute traffic information, route suggestions and information about hotels and restaurants via electronic video maps, symbolic video displays and a synthesized voice.

One of the largest "smart highway" experiments in Southern California is the $50 million "Smart Corridor" project, which is expected to be operational in the spring of 1994. It will use electronic changeable message signs and ramp metering to direct traffic over a 12-mile segment of the Santa Monica Freeway (I-10) in Los Angeles.

Another system already proving useful on toll roads is electronic identification, in which electronic devices on vehicles and in the road track the time and location of a vehicle's passage. These types of devices have greatly reduced delays and traffic congestion by eliminating the need for motorists to stop or slow down their cars to pay a toll.

This system also has the capacity to generate a monthly bill to each motorist who passes through a toll gate. An early version of this technology was tested on the Coronado Bridge.

In support of on-going educational efforts in the transportation industry, this year the Auto Club sponsored one of 33 student engineering clinics researching Intelligent Vehicle Highways Systems at Harvey Mudd College, an undergraduate coeducational institution in Los Angeles County.

Because smart vehicles in the research operate in a semi- or fully-automated mode, the on-board systems that monitor the vehicles' condition are crucial. Student teams were asked to evaluate the cost effectiveness and feasibility of monitoring automobile systems such as tire tread and pressure, brake pad/rotor condition, brakes, cruise control and power-steering operations, as well as research data on car accidents. The work performed by the students will help prevent vehicle breakdowns that could destroy the safety and efficiency benefits of smart-car and highway systems.

Of course, all this high-tech gadgetry has a price. At least $40 billion in public funds will be needed to pay for research, field testing and deployment of smart-car and highway systems nationwide during the next 20 years. This figure does not include the immense private sector funding that will undoubtedly foot a large part of the bill.

The Automobile Club of Southern California supports the continued research and application of smart-car and highway technology. The

mall cost of research is insignificant when what is gained is saved lives, reduced traffic congestion and cleaner air.
is San Diego regional manager for the Automobile Club of lifornia.

4/3,K/39 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00875598
Vehicle identification system for electric toll collection system
Fahrzeugidentifikationssystem fur ein elektrisches Mautgebuhreneinzugssyste m
Systeme d'identification de vehicule pour un systeme electrique de perception de droits de peage
PATENT ASSIGNEE:
NEC CORPORATION, (236690), 7-1, Shiba 5-chome, Minato-ku, Tokyo, (JP), (Proprietor designated states: all)
INVENTOR:
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Kuwahara, Yoshihiko, NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, (JP)
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 802515 A1 971022 (Basic)
EP 802515 B1 011024
APPLICATION (CC, No, Date): EP 97106105 970414;
PRIORITY (CC, No, Date): JP 9692765 960415
DESIGNATED STATES: DE; FR; IT
INTERNATIONAL PATENT CLASS: G08G-001/017
ABSTRACT WORD COUNT: 250
NOTE:
Figure number on first page: 9

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199710W3	1105
CLAIMS B	(English)	200143	1054
CLAIMS B	(German)	200143	850
CLAIMS B	(French)	200143	1141
SPEC A	(English)	199710W3	3857
SPEC B	(English)	200143	3836
Total word count - document A			4963
Total word count - document B			6881
Total word count - documents A + B			11844

...SPECIFICATION wave, a directional finder for measuring the direction of arrival of the radio wave, a **location** detection means for calculating the **location** of the **vehicle** based on the direction of arrival measured by the directional finder, a **vehicle tracking** means for calculating the locus of the **vehicle** based on the identification information of the **vehicle** outputted from the identification means and the **location** information of the **vehicle** outputted from the **location** detection means, a camera means for taking a picture of the **vehicle** and outputting a picture data, and a **toll** collection means for collecting a desired **toll** from the vehicle based on the locus data supplied from the vehicle tracking means and...not shown in the figure. In other words, the movement of the vehicle 10 is **tracked** by the **vehicle tracking** unit 140 (S105). The **tracking** processing by the **vehicle tracking** unit 140 is realized by storing successively **location** data in the memory device while **location** data of the **vehicle** 10 obtained every certain time interval from the **location** detector 130 are correlated for each **location** change by way of correlation processing.

Simultaneously with the processing for acquiring the locus data of the **vehicle** 10 described herein above, a video camera 150 that is a picture data collection means takes a picture of the **toll** collection area, and the picture data which includes the picture of the vehicle 10 which...

...SPECIFICATION identifying the vehicle which comes in a toll collection area and for collecting a prescribed **toll** from the vehicle in accordance with this embodiment of the present invention is additionally provided with a vehicle **tracking** means for calculating the locus of the **vehicle** based on the identification information of the **vehicle** outputted from the identification means and the **location** information of the **vehicle** outputted from the **location** detection means, a camera means for taking a picture of the **vehicle** and outputting picture data, and a **toll** collection means for collecting a desired toll from the vehicle based on the locus data...not shown in the figure. In other words, the movement of the vehicle 10 is **tracked** by the **vehicle** **tracking** unit 140 (S105). The **tracking** processing by the **vehicle** **tracking** unit 140 is realized by storing successively **location** data in the memory device while **location** data of the **vehicle** 10 obtained every certain time interval from the **location** detector 130 are correlated for each **location** change by way of correlation processing.
Simultaneously with the processing for acquiring the locus data of the **vehicle** 10 described herein above, a video camera 150 that is a picture data collection means takes a picture of the **toll** collection area, and the picture data which includes the picture of the vehicle 10 which...

...CLAIMS a directional finder (120) for measuring a direction of arrival of said radio wave,
a **location** detection means (130) for calculating the **location** of said **vehicle** based on the direction of arrival measured by said directional finder,
a **vehicle** **tracking** means (140) for calculating the locus of said **vehicle** based on an identification information of said **vehicle** outputted from said identification means and a **location** information of said **vehicle** outputted from said **location** detection means, and outputting locus data indicative of the locus of said **vehicle** ,
a camera means (150) for taking a picture of said vehicle and outputting a picture data, and
a **toll** collection means (170) for collecting a desired toll from said vehicle based on the locus...

...CLAIMS a toll collection area, and wherein said system is further adapted for collecting a prescribed **toll** from said vehicle, wherein said system further comprises
a vehicle **tracking** means (140) for calculating the locus of said **vehicle** based on an identification information of said **vehicle** outputted from said identification means and a **location** information of said **vehicle** outputted from said **location** detection means, and for outputting locus data indicative of the locus of said **vehicle** ,
a camera means (150) for taking a picture of said vehicle and outputting picture data...

4/3,K/74 (Item 2 from file: 654)
DIALOG(R)File 654:US Pat.Full.

4095898 **IMAGE Available
Derwent Accession: 1995-023089
Utility
REASSIGNED
E/ **Method and apparatus for the registration of a** vehicle **(s) in a free flow** toll **facility by** tracking **the** vehicle **along a** path **in the** toll **facility area**
Inventor: Blomqvist, Kenneth, Jonkoping, SE
Hjelmare, Anders, Granna, SE
Olsson, Lars, Jonkoping, SE
Assignee: Saab-Scania Combitech Aktiebolag (03), Jonkoping, SE
Saab Scania Combitech AB SE
Examiner: Gross, Anita Pellman (Art Unit: 286)
Assistant Examiner: Lee, Michael G.
Combined Principal Attorneys: Donner, Irah H.Pepper Hamilton LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 5859415	A	19990112	US 96553514	19960314
PCT	WO 9428516		19941208	WO 94SE504	19940527
		371:	19960314		
		102e:	19960314		
Priority				SE 931842	19930528
				SE 933203	19930930

Fulltext Word Count: 6788

Method and apparatus for the registration of a vehicle **(s) in a free flow** toll **facility by** tracking **the** vehicle **along a** path **in the** toll **facility area**

4/3,K/40 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00871310
An automatic toll charging system and a vehicle-mounted unit used in the automatic toll charging system
System zum automatischen Erheben von Mautgebuhren und eine im Fahrzeug eingebaute und in einem System zum automatischen Erheben von Mautgebuhren verwendete Einheit
Systeme de taxation automatique des droits de peage et unite montee dans un vehicule et utilisee dans un systeme de taxation automatique des droits de peage
PATENT ASSIGNEE:
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LEGAL REPRESENTATIVE:
Winter, Brandl, Furniss, Hubner, Ross, Kaiser, Polte Partnerschaft (100051), Patent- und Rechtsanwaltskanzlei Alois-Steinecker-Strasse 22, 85354 Freising, (DE)
PATENT (CC, No, Kind, Date): EP 798668 A2 971001 (Basic)
EP 798668 A3 990929
EP 798668 B1 030910
APPLICATION (CC, No, Date): EP 97105142 970326;
PRIORITY (CC, No, Date): JP 9674445 960328
DESIGNATED STATES: DE; FR; GB; IT
INTERNATIONAL PATENT CLASS: G07B-015/00
ABSTRACT WORD COUNT: 157
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199709W4	1304
CLAIMS B	(English)	200337	1641
CLAIMS B	(German)	200337	1556
CLAIMS B	(French)	200337	1796
SPEC A	(English)	199709W4	4904
SPEC B	(English)	200337	5243
Total word count - document A			6210
Total word count - document B			10236
Total word count - documents A + B			16446

...SPECIFICATION above information to the vehicle-mounted unit 10; thereafter, the roadside unit 50 makes the **vehicle** -mounted unit 10 **record** the **toll** , the entrance information, and the **route** information as past **recorded** information in the IC card 20. If the IC card 20 is an prepayment card...

...SPECIFICATION above information to the vehicle-mounted unit 10; thereafter, the roadside unit 50 makes the **vehicle** -mounted unit 10 **record** the **toll** , the entrance information, and the **route** information as past **recorded** information in the IC card 20. If the IC card 20 is an pre-payment...

...CLAIMS further comprising:
a third roadside unit (40) disposed at a check barrier for checking a **route** of said **vehicle** along said **toll** road, and for transmitting **route** information to said **vehicle** -mounted unit when said **vehicle** passes through said check barrier;

wherein said **recording** means is for **recording** said **route** information transmitted from said third roadside unit, and
said control means is for transmitting said **route** information **recorded** in said **recording** means to said second roadside unit disposed at said exit gate when said **vehicle** passes through said exit gate.
8. An automatic **toll** charging system according to claim 7, wherein said control means is for determining whether or...

...is route information which has not yet been used for said payment process in said **recording** means.
9. An automatic **toll** charging system according to claim 8, wherein said **vehicle** -mounted unit is for **recording** said **route** information which has not yet been used for said payment process in said information recording...

...CLAIMS further comprises:
a third roadside unit (40) disposed at a check barrier for checking a **route** of said **vehicle** along said **toll** road, and for transmitting **route** information to said **vehicle** -mounted unit (10) when said **vehicle** passes through said check barrier, wherein:
said **recording** means (13) is for **recording** said **route** information transmitted from said third roadside unit (40), and
said control means (19) is for transmitting said **route** information **recorded** in said **recording** means (13) to said second roadside unit (50) disposed at said exit gate when said **vehicle** passes through said exit gate.
9. An automatic **toll** charging system according to claim 8, characterized in that said control means (19) is for...

...is route information which has not yet been used for said payment process in said **recording** means (13).
10. An automatic **toll** charging system according to claim 9, characterized in that said **vehicle** -mounted unit (10) is for **recording** said **route** information which has not yet been used for said payment process in said detachable information...

?

4/3,K/48 (Item 10 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00565486
TDMA network and protocol for reader-transponder communications and method.
Netz und Protokoll in TDMA-Verfahren zur Kommunikation mit Lesetranspondern.
Reseau et protocole TDMA pour des communications de lecteurs-transpondeurs.
PATENT ASSIGNEE:
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INVENTOR:
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Feikema, Dale R., 3770 Alder Place, Chino Hills, California 91709, (US)
LEGAL REPRESENTATIVE:
Patentanwalte Grunecker, Kinkeldey, Stockmair & Partner (100721), Maximilianstrasse 58, D-80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 565046 A2 931013 (Basic)
EP 565046 A3 950308
APPLICATION (CC, No, Date): EP 93105675 930406;
PRIORITY (CC, No, Date): US 864703 920407
DESIGNATED STATES: DE; FR; GB; NL
INTERNATIONAL PATENT CLASS: H04B-007/26; H04L-012/56;
ABSTRACT WORD COUNT: 224

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	376
SPEC A	(English)	EPABF1	6224
Total word count - document A			6600
Total word count - document B			0
Total word count - documents A + B			6600

...SPECIFICATION been the case in the past. Therefore, the present invention is useful in many Intelligent **Vehicle** Highway Systems for applications such as electronic **toll** collection, **route** guidance (display), traveler information (broadcast), and commercial fleet **tracking** .

A simplified block diagram of the TDMA network 100 which discloses the reader 112 and...

4/3,K/44 (Item 6 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

00741248

Vehicle-carried unit for automatic toll-paying systems and automatic toll-receiving apparatus

Fahrzeuggetragenes Gerat fur ein automatisches Strassengebuhrzahlsystem und automatisches Strassengebuhrempfangsgerat

Appareil pour payer des peages automatiquement fixe sur un vehicule et appareil pour recevoir des peages automatiquement

PATENT ASSIGNEE:
  TOYOTA JIDOSHA KABUSHIKI KAISHA, (203741), 1, Toyota-cho Toyota-shi, Aichi-ken, (JP), (applicant designated states: DE;FR;GB)

INVENTOR:
  Hayashi, Hironao, c/o Toyota Jidosha K.K., 1, Toyota-cho, Toyota-shi, Aichi-ken, (JP)
  Goto, Ken, c/o Toyota Jidosha K.K., 1, Toyota-cho, Toyota-shi, Aichi-ken, (JP)

LEGAL REPRESENTATIVE:
  Tiedtke, Harro, Dipl.-Ing. (11949), Patentanwaltsburo Tiedtke-Buhling-Kinne & Partner Bavariaring 4, D-80336 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 700019 A1 960306 (Basic)
APPLICATION (CC, No, Date): EP 95112329 950804;
PRIORITY (CC, No, Date): JP 94184946 940805
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G07B-015/00;
ABSTRACT WORD COUNT: 146

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB96	1000
SPEC A	(English)	EPAB96	10981
Total word count - document A			11981
Total word count - document B			0
Total word count - documents A + B			11981

...SPECIFICATION balance information cumulated in the storage circuit 48 is read in a step 430.

A **toll** is calculated by the signal processing circuit 46 in a step 432 on the basis of a **toll** table previously **recorded** in the **vehicle** -carried unit, entrance information received at the entrance gate and stored, **route** information received at a junction point and stored if there is any junction point, exit...

4/3,K/43 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00795589
System for detecting the distance travelled by a vehicle in a given area
System zum Erfassen der von einem Fahrzeug in einem vorgegebenen Bereich zuruckgelegten Fahrstrecke
Systeme de detection de la distance parcourue par un vehicule dans une zone predeterminee
PATENT ASSIGNEE:
ROBERT BOSCH GMBH, (200050), Postfach 30 02 20, 70442 Stuttgart, (DE), (Proprietor designated states: all)
INVENTOR:
Blischke, Frank, Dr. Dr.-Ing., Richard-Wagner-Strasse 11, 31141 Hildesheim, (DE)
Gerlings, Karl-Heinz, Dipl.-Ing., Salzkamp 16, 38259 Salzgitter, (DE)
Fischer, Hans-Juergen, Dr. Dr.-Ing., Sensburger Ring 56A, 31141 Hildesheim, (DE)
Ohler, Michael, In der Dehne 4, 31035 Despetal, (DE)
Bassler, Rolf, Dipl.-Ing., Etzwiesenberg 3, 71522 Backnang, (DE)
Mongold, Ralf, Dipl.-Ing. (FH), Veilchenweg 2, 71384 Weinstadt 2, (DE)
PATENT (CC, No, Kind, Date): EP 741373 A2 961106 (Basic)
EP 741373 A3 990929
EP 741373 B1 030319
APPLICATION (CC, No, Date): EP 96106241 960420;
PRIORITY (CC, No, Date): DE 19516061 950504
DESIGNATED STATES: BE; CH; DE; FR; GB; LI
INTERNATIONAL PATENT CLASS: G07B-015/00; G07C-005/00
TRANSLATED ABSTRACT WORD COUNT: 148
ABSTRACT WORD COUNT: 150
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): German; German; German
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(German)	EPAB96	345
CLAIMS B	(English)	200312	399
CLAIMS B	(German)	200312	360
CLAIMS B	(French)	200312	402
SPEC A	(German)	EPAB96	1715
SPEC B	(German)	200312	1778
Total word count - document A			2060
Total word count - document B			2939
Total word count - documents A + B			4999

...CLAIMS the distance travelled by a vehicle in a predefined area for the purpose of charging **tolls** , having the **following** features:
- a **vehicle** device (FG) with which the distance travelled is continuously measured independently of the respective **location** is provided in the **vehicle** ,
- fixed stations (ASE, ASA) which have means for receiving data emitted by a **vehicle** device (FG) are provided at least at the entries to the predefined area and the...

4/3,K/8 (Item 6 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

00594810 92-09983
Intelligent Vehicles, Smart Satellites
Manuta, Lou
Satellite Communications v16n2 PP: 21-24 Feb 1992
ISSN: 0147-7439 JRNL CODE: SAC
WORD COUNT: 2451

...TEXT: are a primary component of ATIS and Commercial Vehicle Systems. Satellites will be employed for **tracking** commercial **truck** fleets, managing traffic, and locating **vehicles** .

* **Vehicle Tracking** :

Commercial **Vehicle** Systems use Qualcomm radio determination satellites to track the **location** of individual commercial **vehicles** for national fleet management and automatic **toll** collection. Two-way messaging with a dispatcher at the trucking company is also possible over...

4/3,K/11 (Item 3 from file: 16)

03947014 Supplier Number: 45713678
Smart traffic spies have US covered
New Scientist, p9
August 5, 1995
Language: English Record Type: Abstract
Document Type: Magazine/Journal; Academic

ABSTRACT:
...much data on them. Intelligent transport systems are being developed by thousands of companies to **track** **vehicles** , control traffic, automate **toll** payments, and give **route** information to motorists.
...
19950805

4/3,K/24 (Item 1 from file: 88)

03778542 SUPPLIER NUMBER: 17775845
ITS and semiconductor technology. (Intelligent Transportation Systems)
Holt, Dan
Automotive Engineering, v103, n11, p18(1)
Nov, 1995
ISSN: 0098-2571 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1159 LINE COUNT: 00092

TEXT:

...and ITS America for the first decade of the 21st century includes traffic management systems, **car** platooning, electronic **toll** collection, in- **car** communication, and a **location** -based technology with GPS and a cellular link of some type into the **automobile** . To achieve this vision, a roadmap of some sort must be **followed** and systems developed along the way. Specifically, three systems - navigation, radar, and toll collection - were...

... problem components and save both time and money by not having to recall so many **vehicles** . Dealer service **records** for individual **vehicles** could be written into the RFID tag and easily be accessed at various dealer **locations** if service was required while traveling.

About $23 billion of **tolls** are being collected worldwide - with the U.S. accounting for 16%, Japan for 64%, and...

19951100

4/3,K/26 (Item 2 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08318447 SUPPLIER NUMBER: 17830818 (USE FORMAT 7 OR 9 FOR FULL TEXT)
CONGESTION, LOST PRODUCTIVITY, LOST LIVES CREATES NEED FOR INTELLIGENT TRANSPORTATION
PR Newswire, p1211CLM005
Dec 11, 1995
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 393 LINE COUNT: 00041

... programmed automatically
before entering the freeway. The driver would then relax while his or her **car** automatically **followed** a predetermined **route** .
-- Automatic tolling booths. **Cars** will no longer stop at **toll** booths. Radio transceivers at the **toll** booths will read a transponder on a vehicle, and the owner will receive a monthly...

19951211

4/3,K/27 (Item 3 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

06738417 SUPPLIER NUMBER: 14542419 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Paving the road toward smarter highways, autos. (Special Report: Automotive)
Clarke, George L.
San Diego Business Journal, v14, n40, p19(2)
Oct 4, 1993
ISSN: 8750-6890 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 1248 LINE COUNT: 00100

... the Santa Monica Freeway (I-10) in Los Angeles.
Another system already proving useful on **toll** roads is electronic identification, in which electronic devices on **vehicles** and in the road **track** the time and **location** of a **vehicle** 's passage. These types of devices have greatly reduced delays and traffic congestion by eliminating ...

19931004

4/3,K/31 (Item 1 from file: 180)
DIALOG(R)File 180:Federal Register

DIALOG Accession Number: 02364491 Supplier Number: 950302381
Automatic Vehicle Monitoring Systems
Volume: 60 Issue: 56 Page: 15248
CITATION NUMBER: 60 FR 15248
Date: THURSDAY, MARCH 23, 1995

TEXT:
... wide geographic area. This technology is used, for example, by trucking companies to locate and **track** their **vehicle** fleets, by municipal governments to pinpoint the **location** of their buses, and by entrepreneurs who are developing subscriber- based, stolen **vehicle** recovery systems. Non-multilateration systems use narrowband technology to transmit data to and from **vehicles** passing through a particular **location** . This technology is now providing valuable services to state and local governments operating various types of automated **toll** collection systems--with an estimated 500,000 cars currently served by such systems--and by...
19950323

4/3,K/33 (Item 1 from file: 264)
DIALOG(R)File 264:DIALOG Defense Newsletters

00004429
COMMERCIAL USE OF GPS
WORLD AEROSPACE WEEKLY
September 25,1992 DOCUMENT TYPE: NEWSLETTER
PUBLISHER: FORECAST INTERNATIONAL DMS
LANGUAGE: ENGLISH WORD COUNT: 926 RECORD TYPE: FULLTEXT

TEXT:
...highway capacity by reducing traffic incidents, clearing them more quickly, rerouting traffic, and automatically collecting **tolls** ;

* Assist drivers in reaching their destinations through enhanced navigation systems with **path** -finding and **route** guidance; and

* Improve productivity of commercial, transit, and public safety **vehicles** by using automated **tracking** and dispatch systems to reroute **vehicles** .

An Expensive Proposition

Developing and deploying IVHS nationwide during the next 20 years will cost...

1992

4/3,K/53 (Item 1 from file: 492)

06851287
DOWN THE PIKE THE RATIONALE FOR TOLL ROADS: YOU GET WHAT YOU PAY FOR
Phoenix Gazette (PG) - WEDNESDAY, December 16, 1992
By: JOHN SEMMENS
Edition: Final Section: Editorial/Opinion Page: A19
Word Count: 724

1992

...Wouldn't paying tolls be time-consuming and inconvenient?

Modern technology makes stopping to pay **tolls** unnecessary. An electronic device little bigger than a credit card can be carried in the **vehicle** . This device automatically **records** the **vehicle** 's travel past the tolling **location** . The driver would be able to maintain full freeway speed. Payment would ultimately be made...

4/3,K/58 (Item 1 from file: 553)
DIALOG(R)File 553:Wilson Bus. Abs. FullText

03321751 H.W. WILSON RECORD NUMBER: BWBA96071751 (USE FORMAT 7 FOR FULLTEXT)
Faster than rush-hour gridlock! Stronger than a speeding NIMBY! It's ... high-tech super-infrastructure!.
Lyne, Jack
Site Selection (Site Sel) v. 41 (Aug. '96) p. 707-9
LANGUAGE: English
WORD COUNT: 2046

(USE FORMAT 7 FOR FULLTEXT)

TEXT:
... the federal government to develop high-tech systems. Those schemes will speed travel for commercial **trucks** and buses.
Maryland's system uses space satellites to precisely **track** **vehicles** ' **locations** . Eventually, **trucks** and buses will pay some road **tolls** electronically, eliminating costly stops. Electronic sensors will read identification stickers on **vehicles** ' windshields, billing automatically.
Another technological boost in speeding products to market is unfolding in Oregon...
1996

4/3,K/59 (Item 1 from file: 608)
DIALOG(R)File 608:KR/T Bus.News.

00171966 Story Number: 5201 (USE FORMAT 7 OR 9 FOR FULLTEXT)
DETROIT FREE PRESS DAN GILLMOR COLUMN
Dan Gillmor
Detroit Free Press
October 18, 1993 13:47 E.T.
DOCUMENT TYPE: Newspaper RECORD TYPE: Fulltext LANGUAGE: English
WORD COUNT: 816

...TEXT: decide to install new cameras and higher-capacity transmission lines, allowing the system to scan **locations** , license-plate numbers and drivers' faces into the computer.
And what about other IVHS systems that include communications devices in **vehicles** that talk with a central computer and get instructions on the best **route** . Will the computer keep **records** of where the **car** has been, and when?
These concerns apply to electronic **tolls** and just about all other IVHS technologies. Will the information be used solely for traffic...

1993

4/3,K/63 (Item 2 from file: 636)
DIALOG(R)File 636:Gale Group Newsletter DB(TM)

02840322 Supplier Number: 45759433 (USE FORMAT 7 FOR FULLTEXT)
Air Force Study on the Beam
Advanced Transportation Technology News, v2, n5, pN/A
Sept 1, 1995
Language: English Record Type: Fulltext
Document Type: Newsletter; Professional
Word Count: 448

... system. Inexpensive read-only tags can be used for short-range applications, e.g., to **track** items moving through a production cycle.

Longer range tags are finding many applications in transportation. The study specifically mentioned **vehicle** identification and automatic **toll** collection and referred to the tagging of rail **cars** to provide real-time **location** information. It also cited trucking companies using these systems to **track** both **vehicles** and freight shipments.

The report said small, short range tags can cost up to $20...

19950901

? t1/9/

1/9/1
DIALOG(R)File 654:US PAT.FULL.

4705473 **IMAGE Available
Derwent Accession: 2002-335485
Utility
E/ **Integrated traffic monitoring assistance, and communications system**
Inventor: Mizunuma, Ichiro, Brighton, MA
Masaki, Ichiro, Boxborough, MA
Assignee: Mitsubishi Denki Kabushiki Kaisha (03), Tokyo, JP
Massachusetts Institute of Technology (02), Cambridge, MA
Massachusetts Institute of Technology
Mitsubishi Denki K K JP (Code: 52912 56262)
Examiner: Nguyen, Tan (Art Unit: 361)
Law Firm: Leydig, Voit & Mayer, Ltd.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6411889	A	20020625	US 2000657522	20000908

Current US Classification (Main): 701117000 (X-ref): 340928000; 701207000
US Classification on document (Main): 701117 (X-ref): 701207; 340928
International Classification (Edition 1): G08G-001/01
Examiner Field of Search (US): 701117; 701207; 340928; 340933; 705013

Cited US Patents:

Patent Number	Date YYYYMM	Main US Class	Inventor
US 4006315	197702	179082	Halstead
US 5602375	199702	235384	Sunahara
US 5717390	199802	340933	Hasselbring
US 5850191	199812	340928	Yagi
US 5872525	199902	340928	Fukasawa
US 5963149	199910	340933	Nagura
US 6064320	200005	340933	D'Hont
US 6166659	200012	340928	Kusano
US 6219613	200104	701207	Terrier
US 6269302	200107	701207	Yoshida

Fulltext Word Count: 7046
Number of Claims: 12
Exemplary or Independent Claim Number(s): 1
Number of Drawing Sheets: 9
Number of Figures: 11
Number of US cited patent references: 10
Calculated Expiration Date: 20200908

Abstract:
A traffic monitoring, driver assistance, and communications system includes lane terminals arranged along a direction of travel of a highway, each lane terminal including a sensor for detecting passage of a vehicle, a communication antenna, a terminal transceiver for communicating with a passing vehicle through the communication antenna, and a network backbone linking the lane terminals to a data processor for compiling information on passing vehicles sensed. The system permits complex toll assessment on toll roads. By using a larger number of short

Author Search

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? show files
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200353
        (c) 2003  Thomson Derwent
File 344:Chinese Patents Abs Aug 1985-2003/Mar
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        (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807
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        (c) 2003 Institution of Electrical Engineers
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        (c) 2003 The HW Wilson Co.
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        (c) 2003, EBSCO Pub.
File 256:SoftBase:Reviews,Companies&Prods. 82-2003/Jul
        (c)2003 Info.Sources Inc
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        (c) 2003 The New York Times
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        (c) 2003 The New York Times
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        (c) 2003 ProQuest Info&Learning
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        (c) 2003 Resp. DB Svcs.
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        (c) 2003 The Dialog Corp.
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        (c) 2003 Financial Times Ltd
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        (c) 1999 Business Wire
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        (c) 1999 PR Newswire Association Inc
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(c) fmt only 2003 Dialog Corp.
File 8:Ei Compendex(R) 1970-2003/Aug W2
(c) 2003 Elsevier Eng. Info. Inc.
File 94:JICST-EPlus 1985-2003/Aug W3
(c)2003 Japan Science and Tech Corp(JST)
File 62:SPIN(R) 1975-2003/Jul W1
(c) 2003 American Institute of Physics
File 144:Pascal 1973-2003/Aug W2
(c) 2003 INIST/CNRS
? ds

Set	Items	Description
S1	14	AU=(KAKIHARA OR FURATA OR TERADA OR AOKI OR MASAKI OR YASU-YUKI OR MARUHIKO OR YASUYUKI) AND TOLL? ?
S2	14	RD (unique items)

? t2/3,k/all

2/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01470490
MONITORING SYSTEM FOR VEHICLE AUTOMATIC ACCOUNTING DEVICE
UBERWACHUNGSSYSTEM FUR EIN FAHRZEUG MIT AUTOMATISCHER ABRECHNUNGSEINRICHTUNG
SYSTEME DE CONTROLE POUR DISPOSITIF DE PAIEMENT AUTOMATIQUE DE VEHICULE
PATENT ASSIGNEE:
Aisin Seiki Kabushiki Kaisha, (203727), 1, Asahi-cho 2-chome, Kariya-shi, Aichi-ken 448-8650, (JP), (Applicant designated States: all)
TOYOTA JIDOSHA KABUSHIKI KAISHA, (203744), 1, Toyota-cho, Toyota-shi, Aichi 471-8571, (JP), (Applicant designated States: all)
INVENTOR:
AOKI, **Yasuyuki**, 31-157, Matahachiyama, Okehazama, Midori-ku, Nagoya-shi, Aichi 458-0911, (JP)
KAKIHARA, **Masaki**, c/o TOYOTA JIDOSHA KABUSHIKI KAISHA 1, Toyota-cho, Toyota-shi, Aichi 471-8571, (JP
LEGAL REPRESENTATIVE:
Leson, Thomas Johannes Alois, Dipl.-Ing. (78981), Patentanwalte Tiedtke-Buhling-Kinne & Partner, Bavariaring 4, 80336 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1333404 A1 030806 (Basic)
WO 2002029729 020411
APPLICATION (CC, No, Date): EP 2001972559 010928; WO 2001JP8503 010928
PRIORITY (CC, No, Date): JP 2000299552 000929
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07B-015/00
ABSTRACT WORD COUNT: 125
NOTE:
Figure number on first page: 0007

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200332	1329
SPEC A	(English)	200332	7452
Total word count - document A			8781
Total word count - document B			0
Total word count - documents A + B			8781

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        (c) 2003 The Gale Group
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        (c) 2003 The Gale Group
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        (c) 2003 Resp. DB Svcs.
File  20:Dialog Global Reporter 1997-2003/Aug 21
        (c) 2003 The Dialog Corp.
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        (c) 2003 Business Wire.
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        (c) 2003 San Jose Mercury News
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        (c) 2003 The Gale Group
File 810:Business Wire 1986-1999/Feb 28
        (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
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         (c) fmt only 2003 Dialog Corp.
File   8:Ei Compendex(R) 1970-2003/Aug W2
         (c) 2003 Elsevier Eng.  Info. Inc.
File  94:JICST-EPlus 1985-2003/Aug W3
         (c)2003 Japan Science and Tech Corp(JST)
File  62:SPIN(R) 1975-2003/Jul W1
         (c) 2003 American Institute of Physics
File 144:Pascal 1973-2003/Aug W2
         (c) 2003 INIST/CNRS
? ds

Set     Items    Description
S1         14    AU=(KAKIHARA OR FURATA OR TERADA OR AOKI OR MASAKI OR YASU-
                 YUKI OR MARUHIKO OR YASUYUKI) AND TOLL? ?
S2         14    RD (unique items)
S3    3975353    ACCOUNTING
S4     802871    TOLL
S5       3224    (TRACK? OR MONITOR? OR DETECT? OR SENS? OR WATCH? OR TRACE?
                 OR TRACING)(5N)(VEHICE? ? OR CAR OR CARS OR AUTOMOBILE? ?)(5-
                 N)(MOVEMENT? ? OR ENTRY? OR ENTER? OR EXIT? OR REENTR? OR REE-
                 NTER?)
S6          0    S3(S)S4(S)S5
S7          0    S3(3S)S4(3S)S5
S8         61    S4(3S)S5
S9         51    RD (unique items)
```

Search Report from Ginger R. DeMille

```
? show files
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200353
         (c) 2003  Thomson Derwent
File 344:Chinese Patents Abs Aug 1985-2003/Mar
         (c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
         (c) 2003 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
? ds

Set       Items    Description
S1           11    TOLL()(ZONE? ? OR LANE? ?)
S2       324265    ZONE? ? OR LANE? ?
S3      1207023    EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
                EMOVE?
S4         2491    REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
                CE?
S5       701296    ENTER? OR ENTRANCE? OR RETURN?
S6          930    (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7            0    (S1 OR S2) AND (S3 OR S5) AND S4 AND S6
S8           34    (S1 OR S2) AND (S3 OR S5) AND S6
? t8/4/all
```

8/4/1   (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

IM- *Image available*
AA- 2002-355317/200239|
XR- <XRPX> N02-279305|
TI- Toll fee receipt device for vehicle; guides user of vehicle to perform operations required to **pay** **toll** fee, when vehicle **enters** into manual toll collection **lane** |
PA- PIONEER ELECTRONIC CORP (PIOE)|
NC- 001|
NP- 001|
PN- JP 2002008076 A 20020111 JP 2000183369 A 20000619 200239 B|
AN- <LOCAL> JP 2000183369 A 20000619|
AN- <PR> JP 2000183369 A 20000619|
LA- JP 2002008076(14)|
AB- <PN> JP 2002008076 A|
AB- <NV> NOVELTY - The user of a vehicle is guided to perform operations required to **pay** the **toll** fee, when the vehicle **enters** into a manual toll collection **lane** . When the vehicle passes through an automatic fee payment **lane** , an ETC antenna communicates with the traffic equipment installed in the ETC booth for automatically collecting the toll fee.|
AB- <BASIC> USE - For collecting toll fee from vehicle in a toll gate.
    ADVANTAGE - Fee payment through manual operations is smoothly performed and delay due to traffic congestion is eliminated.
    DESCRIPTION OF DRAWING(S) - The figure shows the flowchart explaining the user guiding process in the outlet toll gate. (Drawing includes non-English language text).
    pp; 14 DwgNo 7/7|
DE- <TITLE TERMS> TOLL; FEE; RECEIPT; DEVICE; VEHICLE; GUIDE; USER; VEHICLE ; PERFORMANCE; OPERATE; REQUIRE; PAY; TOLL; FEE; VEHICLE; **ENTER** ; MANUAL; TOLL; COLLECT; **LANE** |
DC- T05; T07; X22|
IC- <MAIN> G07B-015/00|
IC- <ADDITIONAL> G01C-021/00; G08G-001/017; G08G-001/09|

```
? show files
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200353
        (c) 2003  Thomson Derwent
File 344:Chinese Patents Abs Aug 1985-2003/Mar
        (c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
        (c) 2003 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
        (c) 2002 INPI.  All rts. reserv.
? ds

Set     Items   Description
S1       1995   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
             PAY)
S2          1   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
             RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
             W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
             ING)
S4          1   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
             )(TWICE OR MORE()THAN()ONCE)
S5      20138   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
             Y)
S6       5852   TOLL OR TOLLS
S7          5   S1 AND S5
S8          4   S1(S)S5
S9          1   S3 OR S4
S10         0   S6 AND S8
S11         0   S10 NOT S9
S12       294   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
             STREET OR TARMAC?)
S13         1   (S1 OR S3 OR S4 OR S5)(3S)S12
S14         1   S13 NOT (S3:S4 OR S9:S11)
S15         1   S13 OR S14
?

?


?
?

?
```

```
? show files
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200353
         (c) 2003  Thomson Derwent
File 344:Chinese Patents Abs Aug 1985-2003/Mar
         (c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
         (c) 2003 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
? ds

Set     Items   Description
S1       1995   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
                 PAY)
S2          1    (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
                 RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0    ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
                 W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
                 ING)
S4          1    ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
                 )(TWICE OR MORE()THAN()ONCE)
S5      20138    (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
                 Y)
S6       5852   TOLL OR TOLLS
S7          5   S1 AND S5
S8          7   S1 AND S6
S9         14   S2 OR S4 OR S7:S8
? t9/4/all
```

9/4/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

IM- *Image available*
AA- 2001-520991/200157|
XR- <XRPX> N01-385915|
TI- **Toll** free call service provision system for telecommunication network, controls connection of source terminal to one of servers depending on information received from source terminal|
PA- KANSAI NIPPON DENKI TSUSHIN SYSTEM KK (KANS-N); NEC CORP (NIDE)|
AU- <INVENTORS> IZUMI A; OKADA H; TSUJII T|
NC- 002|
NP- 002|
PN- US 20010015973 A1 20010823 US 2001790508 A 20010223 200157 B|
PN- JP 2001237991 A 20010831 JP 200046493 A 20000223 200158|
AN- <LOCAL> US 2001790508 A 20010223; JP 200046493 A 20000223|
AN- <PR> JP 200046493 A 20000223|
LA- US 20010015973(13); JP 2001237991(11)|
AB- <PN> US 20010015973 A1|
AB- <NV> NOVELTY - The system has a source terminal (10) for making **toll** free call on called party pays line of a circuit switched network (100). Servers (20) are connected to internet protocol (IP) network (200), allowing transmission and reception of information in IP packets. A connection controller (2) controls connection of the source terminal to one of the servers depending on information received from source terminal.|
AB- <BASIC> DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for connection control method in **toll** free service system.

USE - For allowing **toll** free calls in telecommunication networks.

ADVANTAGE - Since communication is made through called party pays

Search Report from Ginger R. DeMille

```
? show files
File 348:EUROPEAN PATENTS 1978-2003/Aug W02
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807
         (c) 2003 WIPO/Univentio
? ds

Set     Items   Description
S1       4789   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
             PAY)
S2          0   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
             RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          1   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
             W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
             ING)
S4          4   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
             )(TWICE OR MORE()THAN()ONCE)
S5      46648   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
             Y)
S6       5077   TOLL OR TOLLS
S7        511   S1 AND S5
S8         49   S1(S)S5
S9          5   S3 OR S4
S10         6   S6 AND S8
S11         6   S10 NOT S9
S12       297   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
             STREET OR TARMAC?)
S13         6   (S1 OR S3 OR S4 OR S5)(3S)S12
S14         6   S13 NOT (S3:S4 OR S9:S11)
?
```

```
? show files
File 348:EUROPEAN PATENTS 1978-2003/Aug W02
        (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807
        (c) 2003 WIPO/Univentio
? ds

Set     Items   Description
S1         25   TOLL()(ZONE? ? OR LANE? ?)
S2     292932   ZONE? ? OR LANE? ?
S3     713237   EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
              EMOVE?
S4      10161   REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
              CE?
S5     879826   ENTER? OR ENTRANCE? OR RETURN?
S6        755   (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7          1   (S1 OR S2)(3S)(S3 OR S5)(3S)S4(3S)S6
S8         78   (S1 OR S2)(3S)(S3 OR S5)(3S)S6
S9         78   S7 OR S8
S10        10   S9 AND IC=G06F
S11         0   S10 AND IC=G07C
S12        73   (S1 OR S2)(2S)(S3 OR S5)(2S)S6
S13        41   (S1 OR S2)(S)(S3 OR S5)(S)S6
S14        15   (S1 OR S2)(6N)(S3 OR S5)(S)S6
? t14/5,k/all
```

14/5,K/1   (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01469713
POSITION RECOGNIZING DEVICE AND POSITION RECOGNIZING METHOD, AND ACCOUNTING DEVICE AND ACCOUNTING METHOD
POSITIONSERKENNUNGSEINRICHTUNG UND POSITIONSERKENNUNGSVERFAHREN UND VERWALTUNGSEINRICHTUNG UND VERWALTUNGSVERFAHREN
DISPOSITIF ET PROCEDE DE RECONNAISSANCE DE POSITION, ET DISPOSITIF ET PROCEDE D'ESTIMATION
PATENT ASSIGNEE:
  TOYOTA JIDOSHA KABUSHIKI KAISHA, (203744), 1, Toyota-cho, Toyota-shi, Aichi 471-8571, (JP), (Applicant designated States: all)
  Aisin Seiki Kabushiki Kaisha, (203727), 1, Asahi-cho 2-chome, Kariya-shi, Aichi-ken 448-8650, (JP), (Applicant designated States: all)
INVENTOR:
  KAKIHARA, Masaki, Toyota Jidosha K.K., 1, Toyota-cho, Toyota-shi, Aichi 471-8571, (JP)
  AOKI, Yasuyuki, 31-157, Matahachiyama, Okehazama, Arimatsu-cho, Midori-ku, Nagoya-shi, Aichi 458-0911, (JP)
LEGAL REPRESENTATIVE:
  Winter, Brandl, Furniss, Hubner, Ross, Kaiser, Polte Partnerschaft (100051), Patent- und Rechtsanwaltskanzlei Alois-Steinecker-Strasse 22, 85354 Freising, (DE)
PATENT (CC, No, Kind, Date): EP 1326212 A1 030709 (Basic)
                             WO 2002029728 020411
APPLICATION (CC, No, Date): EP 2001955677 010810; WO 2001JP6930 010810
PRIORITY (CC, No, Date): JP 2000300034 000929
DESIGNATED STATES: DE; DK; ES; FR; GB; IT; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07B-015/00; G08G-001/0969; G01S-005/14; G01C-021/00

ABSTRACT EP 1326212 A1

```
? show files
File  47:Gale Group Magazine DB(TM) 1959-2003/Aug 12
         (c) 2003 The Gale group
File  88:Gale Group Business A.R.T.S. 1976-2003/Aug 20
         (c) 2003 The Gale Group
File 141:Readers Guide 1983-2003/Jul
         (c) 2003 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 20
         (c)2003 The Gale Group
File 484:Periodical Abs Plustext 1986-2003/Aug W3
         (c) 2003 ProQuest
File 545:Investext(R) 1982-2003/Aug 21
         (c) 2003 Thomson Financial Networks
File 608:KR/T Bus.News. 1992-2003/Aug 21
         (c)2003 Knight Ridder/Tribune Bus News
File 654:US PAT.FULL. 1976-2003/Aug 19
         (c) FORMAT ONLY 2003 THE DIALOG CORP.
File 702:Miami Herald 1983-2003/Aug 20
         (c) 2003 The Miami Herald Publishing Co.
File 733:The Buffalo News 1990- 2003/Aug 19
         (c) 2003 Buffalo News
? ds

Set     Items   Description
S1         14   TOLL? ?(2S)ACCOUNTING(2S)(CHARGE? OR CHARGING OR PAY OR PA-
             YING OR PAID OR DEBIT? OR DEDUCT?)(3W)(TWICE OR DOUBLE OR TWO-
             ()TIMES)
S2         10   RD (unique items)
? t2/3,k/all
```

2/3,K/1 (Item 1 from file: 47)
DIALOG(R)File 47:Gale Group Magazine DB(TM)

05328478 SUPPLIER NUMBER: 54098104 (USE FORMAT 7 OR 9 FOR FULL TEXT)
The GDP Myth.(gross domestic product; questionable whether economic growth is inherently good)
ROWE, JONATHAN; SILVERSTEIN, JUDITH
Washington Monthly, 31, 3, 17(1)
March, 1999
ISSN: 0043-0633 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 4142 LINE COUNT: 00310

... in the economics textbooks but not in the world we inhabit. W. Steven Albrecht, an **accounting** professor at Brigham Young University, estimates that white-collar fraud costs us some $200 billion...

...telemarketing fraud alone.
In an era of deregulation and belief in benign "market forces," the **toll** gets steadily worse. Phone bills and the like have become horrendously complex, for example. The...

...Today we literally have to pay for access to our own money, and increasingly we **pay twice** .
The average bank customer in the United States pays over $150 a year in ATM...

2/3,K/2 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

```
show files
File   9:Business & Industry(R) Jul/1994-2003/Aug 20
         (c) 2003 Resp. DB Svcs.
File  16:Gale Group PROMT(R) 1990-2003/Aug 20
         (c) 2003 The Gale Group
File  20:Dialog Global Reporter 1997-2003/Aug 21
         (c) 2003 The Dialog Corp.
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 20
         (c)2003 The Gale Group
File 180:Federal Register 1985-2003/Aug 20
         (c) 2003 format only The DIALOG Corp
File 258:AP News Jul 2000-2003/Aug 21
         (c) 2003 Associated Press
File 492:Arizona Repub/Phoenix Gaz 19862002/Jan 06
         (c) 2002 Phoenix Newspapers
File 545:Investext(R) 1982-2003/Aug 21
         (c) 2003 Thomson Financial Networks
File 608:KR/T Bus.News. 1992-2003/Aug 21
         (c)2003 Knight Ridder/Tribune Bus News
File 619:Asia Intelligence Wire 1995-2003/Aug 20
         (c) 2003 Fin. Times Ltd
File 624:McGraw-Hill Publications 1985-2003/Aug 20
         (c) 2003 McGraw-Hill Co. Inc
File 626:Bond Buyer Full Text 1981-2003/Aug 21
         (c) 2003 Bond Buyer
File 631:Boston Globe 1980-2003/Aug 20
         (c) 2003 Boston Globe
File 635:Business Dateline(R) 1985-2003/Aug 20
         (c) 2003 ProQuest Info&Learning
File 642:The Charlotte Observer 1988-2003/Aug 20
         (c) 2003 Charlotte Observer
File 654:US PAT.FULL. 1976-2003/Aug 19
         (c) FORMAT ONLY 2003 THE DIALOG CORP.
File 706:(New Orleans)Times Picayune 1989-2003/Aug 20
         (c) 2003 Times Picayune
File 713:Atlanta J/Const. 1989-2003/Aug 21
         (c) 2003 Atlanta Newspapers
File 719:(Albany) The Times Union Mar 1986-2003/Aug 20
         (c) 2003 Times Union
File 727:Canadian Newspapers 1990-2003/Aug 21
         (c) 2003 Southam Inc.
File 728:Asia/Pac News 1994-2003/Aug W3
         (c) 2003 Dialog Corporation
File 736:Seattle Post-Int. 1990-2003/Aug 20
         (c) 2003 Seattle Post-Intelligencer
File 738:(Allentown) The Morning Call 1990-2003/Aug 20
         (c) 2003 Morning Call
File 743:(New Jersey)The Record 1989-2003/Aug 19
         (c) 2003 No.Jersey Media G Inc
File 756:Daily/Sunday Telegraph 2000-2003/Aug 21
         (c) 2003 Telegraph Group
File 781:ProQuest Newsstand 1998-2003/Aug 20
         (c) 2003 ProQuest Info&Learning
File 992:NewsRoom 2003/Jan-Mar
         (c) 2003 The Dialog Corporation
File 993:NewsRoom 2002/
         (c) 2003 The Dialog Corporation
File 994:NewsRoom 2001
         (c) 2003 The Dialog Corporation
File 995:NewsRoom 2000
         (c) 2003 The Dialog Corporation
```

? ds

Set	Items	Description
S1	58	NON()TOLL(10N)(BOOTH? OR ZONE? OR LANE?)
S2	45	RD (unique items)

? t2/3,k/all

```
? show files
File   8:Ei Compendex(R) 1970-2003/Aug W2
         (c) 2003 Elsevier Eng.  Info. Inc.
File  11:PsycINFO(R) 1887-2003/Aug W3
         (c) 2003 Amer. Psychological Assn.
File  15:ABI/Inform(R) 1971-2003/Aug 20
         (c) 2003 ProQuest Info&Learning
File  20:Dialog Global Reporter 1997-2003/Aug 20
         (c) 2003 The Dialog Corp.
File  47:Gale Group Magazine DB(TM) 1959-2003/Aug 11
         (c) 2003 The Gale group
File  48:SPORTDiscus 1962-2003/Aug
         (c) 2003 Sport Information Resource Centre
File  63:Transport Res(TRIS) 1970-2003/Jul
         (c) fmt only 2003 Dialog Corp.
File  88:Gale Group Business A.R.T.S. 1976-2003/Aug 19
         (c) 2003 The Gale Group
File  98:General Sci Abs/Full-Text 1984-2003/Jul
         (c) 2003 The HW Wilson Co.
File 141:Readers Guide 1983-2003/Jul
         (c) 2003 The HW Wilson Co
File 144:Pascal 1973-2003/Aug W2
         (c) 2003 INIST/CNRS
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 19
         (c)2003 The Gale Group
File 158:DIOGENES(R) 1976-2003/Aug W3
         (c) 2003 DIOGENES
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 180:Federal Register 1985-2003/Aug 20
         (c) 2003 format only The DIALOG Corp
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
         (c) 2003 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2003/Aug W02
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807
         (c) 2003 WIPO/Univentio
File 433:Charleston Newspapers 1997-2003/Aug 19
         (c) 2003 Charleston Newspapers
File 484:Periodical Abs Plustext 1986-2003/Aug W3
         (c) 2003 ProQuest
File 545:Investext(R) 1982-2003/Aug 20
         (c) 2003 Thomson Financial Networks
File 553:Wilson Bus. Abs. FullText 1982-2003/Jul
         (c) 2003 The HW Wilson Co
File 609:Bridge World Markets 2000-2001/Oct 01
         (c) 2001 Bridge
File 613:PR Newswire 1999-2003/Aug 20
         (c) 2003 PR Newswire Association Inc
File 623:Business Week 1985-2003/Aug 19
         (c) 2003 The McGraw-Hill Companies Inc
File 624:McGraw-Hill Publications 1985-2003/Aug 20
         (c) 2003 McGraw-Hill Co. Inc
File 635:Business Dateline(R) 1985-2003/Aug 20
         (c) 2003 ProQuest Info&Learning
File 652:US Patents Fulltext 1971-1975
         (c) format only 2002 The Dialog Corp.
File 654:US PAT.FULL. 1976-2003/Aug 19
         (c) FORMAT ONLY 2003 THE DIALOG CORP.
File 701:St Paul Pioneer Pr Apr 1988-2003/Aug 17
         (c) 2003 St Paul Pioneer Press
```

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File 711:Independent(London) Sep 1988-2003/Aug 20
        (c) 2003 Newspaper Publ. PLC
File 718:Pittsburgh Post-Gazette Jun 1990-2003/Aug 20
        (c) 2003 PG Publishing
File 727:Canadian Newspapers 1990-2003/Aug 20
        (c) 2003 Southam Inc.
File 757:Mirror Publications/Independent Newspapers 2000-2003/Aug 20
        (c) 2003
File 768:EIU Market Research 2003/Aug 18
        (c) 2003 EIU
File 781:ProQuest Newsstand 1998-2003/Aug 20
        (c) 2003 ProQuest Info&Learning
File 813:PR Newswire 1987-1999/Apr 30
        (c) 1999 PR Newswire Association Inc
File 990:NewsRoom Current 2003/Aug 20
        (c) 2003 The Dialog Corp.
File 992:NewsRoom 2003/Jan-Mar
        (c) 2003 The Dialog Corporation
File 993:NewsRoom 2002/
        (c) 2003 The Dialog Corporation
File 994:NewsRoom 2001
        (c) 2003 The Dialog Corporation
? ds

Set     Items   Description
S1        132   (TRACK? OR MONITOR? OR DETECT?)(5N)(CHANGE? OR CHANGING OR
                VEER? OR SWERV?)(3N)(ROAD? ? OR LANE? ? OR ZONE? ?)(S)(ACCOUN-
                TING OR DEBIT? OR PAY? OR PAID)
S2        114   RD (unique items)
? t2/3,k/all
```

2/3,K/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04662126 E.I. No: EIP97043593014
Title: Using pay zone steering in high-angle and horizontal wells
Author: Jackson, Charles E.
Corporate Source: Halliburton Energy Services
Conference Title: Proceedings of the 1997 10th Middle East Oil Show & Conference. Part 2 (of 2)
Conference Location: Bahrain, Saudi Arabia Conference Date: 19970315-19970318
E.I. Conference No.: 46214
Source: Proceedings of the Middle East Oil Show v 2 1997. Society of Petroleum Engineers (SPE), Richardson, TX, USA. p 487-500 SPE 37819
Publication Year: 1997
CODEN: PEOSEH
Language: English

Abstract: This paper examines the benefits of **Pay** Zone Steering, an integrated approach to drilling high-angle and horizontal wells incorporating advanced resistivity forward modeling into the overall planning and drilling phases. **Pay** **Zone** Steering provides quick **detection** of geological **changes** and allows for subsequent adjustments to the well plan. Key to this method are (1...
...well's critical features are discussed, as well as applications for post-well analysis. The **Pay** Zone Steering process, from establishing objectives to final completion, is illustrated with case studies. The...

```
? show files
File  88:Gale Group Business A.R.T.S. 1976-2003/Aug 19
        (c) 2003 The Gale Group
File 103:Energy SciTec 1974-2003/Aug B1
        (c) 2003 Contains copyrighted material
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 19
        (c)2003 The Gale Group
File 180:Federal Register 1985-2003/Aug 20
        (c) 2003 format only The DIALOG Corp
File 340:CLAIMS(R)/US Patent 1950-03/Aug 14
        (c) 2003 IFI/CLAIMS(R)
? ds

Set     Items   Description
S1          5   TOLL? ?(S)(ACCOUNTING OR TRACK?)(S)(PAY? OR DEBIT? OR DEDU-
             CT? OR CHARGE? OR CHARGING? OR PAID)(3W)(DOUBLE OR TWICE OR T-
             WO()TIMES OR MORE()THAN()ONCE)
S2          5   RD (unique items)
? t2/3,k/all
```

2/3,K/1 (Item 1 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

04153451 SUPPLIER NUMBER: 19009697
Copyright and a democratic civil society.
Netanel, Neil Weinstock
Yale Law Journal, 106, n2, 283-387
Nov, 1996
ISSN: 0044-0094 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 64816 LINE COUNT: 05369

... Management Group" with the intent to promote widescale electronic clearance, per-use billing, encryption, and **tracking** for content that is available over digital networks. See Copyright Clearance Ctr., Inc., Press Release...F.3d 913, 936 (2d Cir. 1994) (Jacobs, J., dissenting) (noting that plaintiff journal publisher **charged** institutional subscribers **double** normal subscription rate in expectation that employees would copy articles for personal use). At the...onerous than some minimalist critics fear. Charges could take place automatically and mechanically, much like **toll** charges on a phone bill or, more likely, as a lump sum license fee, added...

2/3,K/2 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

03231208 CANM-91-001255; EDB-91-158644
Title: Natural gas purchasing practices in Ontario
Author(s): Milne, P. (Peter Milne Associates Inc., Ottawa, ON (Canada))
Title: Twenty-ninth annual conference (of the) Ontario Petroleum Institute Inc.
Corporate Source: Ontario Petroleum Inst., Inc., Chatham, ON (Canada)
Conference Title: 29. annual conference (of the) Ontario Petroleum Institute Inc
Conference Location: London (Canada) Conference Date: 14-16 Nov 1990
Publication Date: 1990
p 1-16, Paper 14 (vp.)
Report Number(s): OPI-CE03915 CONF-9011246--; CE--03915

```
? show files
File  62:SPIN(R) 1975-2003/Jul W1
         (c) 2003 American Institute of Physics
File 370:Science 1996-1999/Jul W3
         (c) 1999 AAAS
File  94:JICST-EPlus 1985-2003/Aug W2
         (c)2003 Japan Science and Tech Corp(JST)
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
? ds

Set     Items   Description
S1       2055   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
                PAY)
S2          0   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
                RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
                W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
                ING)
S4          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
                )(TWICE OR MORE()THAN()ONCE)
S5       1237   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
                Y)
S6       6455   TOLL OR TOLLS
S7          0   S2 OR S3
S8          0   S4 AND S6
S9          0   S7 OR S8
S10         0   RD (unique items)
S11        16   (S1 OR S5)(S)S6
S12        62   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
                STREET OR TARMAC?)
S13         0   S5(S)S12
S14         0   RD (unique items)
S15         0   S10 OR S14
S16         0   S2 OR S3 OR S4 OR S10 OR S15
S17         0   RD (unique items)
S18        16   S11 OR S17
S19        16   RD (unique items)
? t19/3,k/all
```

19/3,K/1   (Item 1 from file: 94)

DIALOG(R)File 94:JICST-EPlus

05363052   JICST ACCESSION NUMBER: 02A0939974 FILE SEGMENT: JICST-E

Investigation and Realization of pay-TV System on IP Network. Experiment on TV broadcasting System over IP Multicast with User Authentication.

KITAMURA MASAKAZU (1); OSHIUMI TAKUSHI (1); NISHIO SHUICHI (1); MOTONO TOMOHARU (1); ODA YOSHIKAZU (2)
(1) Nippon Telegraph and Telephone West Corp., JPN; (2) Nttnishinihon Gijutsubu

Joho Shori Gakkai Shinpojiumu Ronbunshu, 2002, VOL.2002,NO.15, PAGE.111-116 , FIG.3, TBL.2, REF.10
JOURNAL NUMBER: Y0978BAT   ISSN NO: 1344-0640
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:654   681.3.02-759   681.3.066
LANGUAGE: Japanese   COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

ABSTRACT: This paper describes how to realize **toll** TV systems utilizing

```
? show files
File  62:SPIN(R) 1975-2003/Jul W1
         (c) 2003 American Institute of Physics
File 370:Science 1996-1999/Jul W3
         (c) 1999 AAAS
File  94:JICST-EPlus 1985-2003/Aug W3
         (c)2003 Japan Science and Tech Corp(JST)
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
? ds

Set      Items   Description
S1          10   TOLL()(ZONE? ? OR LANE? ?)
S2       96135   ZONE? ? OR LANE? ?
S3      105119   EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
              EMOVE?
S4        1625   REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
              CE?
S5      242501   ENTER? OR ENTRANCE? OR RETURN?
S6         528   (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7           0   (S1 OR S2) AND (S3 OR S5) AND S4 AND S6
S8           7   (S1 OR S2) AND (S3 OR S5) AND S6
S9           7   RD (unique items)
? t9/3,k/all
```

9/3,K/1 **(Item 1 from file: 583)**
DIALOG(R)File 583:Gale Group Globalbase(TM)

09098229
Expressway smart cards put in the slow **lane**
THAILAND: SMART CARD SYSTEM FOR HIGHWAY HALTED
Bangkok Post (XBN) 30 Apr 1999 p.3
Language: ENGLISH

Expressway smart cards put in the slow **lane**

... for the first 20 km. The contactless smart card system involves drivers collecting cards upon **entrance** into the expressway. **Tolls** will be **charged** when drivers **return** the cards at **exits** where readings will then be taken.

9/3,K/2 **(Item 2 from file: 583)**
DIALOG(R)File 583:Gale Group Globalbase(TM)

06677755
Cabbies who take passengers to KLIA allowed extra RM 10
MALAYSIA: OUT OF **ZONE** OPERATION FOR SUKOM
New Straits Times (XAS) 27 Aug 1998 p.7
Language: ENGLISH

MALAYSIA: OUT OF **ZONE** OPERATION FOR SUKOM

...the Commonwealth Games (Sukom) to be held in Malaysia, taxis are allowed for out of **zone** operation commencing 1 - 30 September 1998. This was to ensure tourist and visitors are adequately...

...above the meter to Jalan Duta bus stops. This is to cover the cost of

```
? show files
File   6:NTIS 1964-2003/Aug W3
         (c) 2003 NTIS, Intl Cpyrght All Rights Res
File  63:Transport Res(TRIS) 1970-2003/Jul
         (c) fmt only 2003 Dialog Corp.
? ds

Set     Items   Description
S1        238   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
               PAY)
S2          0   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
               RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
               W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
               ING)
S4          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
               )(TWICE OR MORE()THAN()ONCE)
S5        492   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
               Y)
S6       6441   TOLL OR TOLLS
S7          0   S2 OR S3
S8          0   S4 AND S6
S9          0   S7 OR S8
S10         0   RD (unique items)
S11        14   (S1 OR S5)(S)S6
S12       165   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
               STREET OR TARMAC?)
S13         0   S5(S)S12
S14         0   RD (unique items)
S15         0   S10 OR S14
S16         0   S2 OR S3 OR S4 OR S10 OR S15
S17         0   RD (unique items)
S18        14   S11 OR S17
S19        12   RD (unique items)
? t19/3,k/all
```

19/3,K/1 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

2002467 NTIS Accession Number: PB97-151344
Network Optimized Congestion Pricing: A Parable, Model and Algorithm
(Final rept)
Dial, R. B.
John A. Volpe National Transportation Systems Center, Cambridge, MA.
Corp. Source Codes: 098811000
Sponsor: Department of Transportation, Washington, DC. Travel Model Improvement Program.
Report No.: DOT-T-95-20
May 95 40p
Languages: English
Journal Announcement: GRAI9713
Sponsored by Department of Transportation, Washington, DC. Travel Model Improvement Program.
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A04/MF A01

This report recites a parable, formulates a model and devises an

Search Report from Ginger R. DeMille

```
? show files
File  80:TGG Aerospace/Def.Mkts(R) 1986-2003/Aug 15
         (c) 2003 The Gale Group
File 637:Journal of Commerce 1986-2003/Aug 19
         (c) 2003 Commonwealth Bus. Media
? ds

Set     Items   Description
S1       1677   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
                PAY)
S2          0   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
                RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
                W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
                ING)
S4          1   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
                )(TWICE OR MORE()THAN()ONCE)
S5       1458   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
                Y)
S6       5026   TOLL OR TOLLS
S7          0   S2 OR S3
S8          0   S4 AND S6
S9          0   S7 OR S8
S10         0   RD (unique items)
S11        21   (S1 OR S5)(S)S6
S12        48   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
               STREET OR TARMAC?)
S13         0   S5(S)S12
S14         0   RD (unique items)
S15         0   S10 OR S14
S16         1   S2 OR S3 OR S4 OR S10 OR S15
S17         1   RD (unique items)
S18        22   S11 OR S17
S19        17   RD (unique items)
? t19/3,k/all
```

19/3,K/1 (Item 1 from file: 637)
DIALOG(R)File 637:Journal of Commerce

0006292576
Germany delays highway tolls
JOURNAL OF COMMERCE (JC) - August 1, 2003
By: BRUCE BARNARD - THE JOURNAL OF COMMERCE ONLINE
Edition: Web Section: LOGIS Page: WP
Word Count: 252

... chaos because of a shortage of truck-related hardware needed to collect the pass-through **toll** .
There is little chance, however, that the government will abandon the 14 cents-a-mile...

... for investment in rail freight. Germany is the only large continental European country that does **not** **charge** for the use of its roads prompting many hundreds of thousands of foreign trucks to...

... into the legality of an $800 million government program to compensate domestic truckers for the **toll** .
Shippers and truckers won another reprieve after the European Court of Justice ordered Austria to...

```
? show files
File 471:New York Times Fulltext 90-Day 2003/Aug 18
        (c) 2003 The New York Times
File 489:The News-Sentinel 1991-2003/Aug 18
        (c) 2003 Ft. Wayne Newspapers, Inc
File 490:Tallahassee Democrat 1993- 2003/Jul 27
        (c) 2003 Tallahassee Democrat
File 492:Arizona Repub/Phoenix Gaz 19862002/Jan 06
        (c) 2002 Phoenix Newspapers
File 494:St LouisPost-Dispatch 1988-2003/Aug 18
        (c) 2003 St Louis Post-Dispatch
File 498:Detroit Free Press 1987-2003/Aug 18
        (c) 2003 Detroit Free Press Inc.
File 631:Boston Globe 1980-2003/Aug 17
        (c) 2003 Boston Globe
File 633:Phil.Inquirer 1983-2003/Aug 11
        (c) 2003 Philadelphia Newspapers Inc
File 634:San Jose Mercury  Jun 1985-2003/Aug 17
        (c) 2003 San Jose Mercury News
File 638:Newsday/New York Newsday 1987-2003/Aug 18
        (c) 2003 Newsday Inc.
File 640:San Francisco Chronicle 1988-2003/Aug 17
        (c) 2003 Chronicle Publ. Co.
File 641:Rocky Mountain News Jun 1989-2003/Aug 18
        (c) 2003 Scripps Howard News
File 642:The Charlotte Observer 1988-2003/Aug 17
        (c) 2003 Charlotte Observer
File 643:Grand Forks Herald 1995-2003/Aug 18
        (c) 2003 Grand Forks Herald
File 701:St Paul Pioneer Pr Apr 1988-2003/Aug 16
        (c) 2003 St Paul Pioneer Press
File 702:Miami Herald 1983-2003/Aug 18
        (c) 2003 The Miami Herald Publishing Co.
File 703:USA Today 1989-2003/Aug 18
        (c) 2003 USA Today
File 704:(Portland)The Oregonian 1989-2003/Aug 18
        (c) 2003 The Oregonian
File 706:(New Orleans)Times Picayune 1989-2003/Aug 19
        (c) 2003 Times Picayune
File 707:The Seattle Times 1989-2003/Aug 17
        (c) 2003 Seattle Times
File 708:Akron Beacon Journal 1989-2003/Aug 15
        (c) 2003 Akron Beacon Journal
File 709:Richmond Times-Disp. 1989-2003/Aug 14
        (c) 2003 Richmond Newspapers Inc
File 712:Palm Beach Post 1989-2003/Aug 18
        (c) 2003 Palm Beach Newspapers Inc.
File 713:Atlanta J/Const. 1989-2003/Aug 17
        (c) 2003 Atlanta Newspapers
File 714:(Baltimore) The Sun 1990-2003/Aug 19
        (c) 2003 Baltimore Sun
File 715:Christian Sci.Mon. 1989-2003/Aug 19
        (c) 2003 Christian Science Monitor
File 716:Daily News Of L.A. 1989-2003/Aug 16
        (c) 2003 Daily News of Los Angeles
File 717:The Washington Times Jun 1989-2003/Aug 19
        (c) 2003 Washington Times
File 718:Pittsburgh Post-Gazette Jun 1990-2003/Aug 19
        (c) 2003 PG Publishing
File 719:(Albany) The Times Union Mar 1986-2003/Aug 18
        (c) 2003 Times Union
```

File 720:(Columbia) The State Dec 1987-2003/Aug 18
(c) 2003 The State
File 721:Lexington Hrld.-Ldr. 1990-2003/Aug 17
(c) 2003 Lexington Herald-Leader
File 722:Cincinnati/Kentucky Post 1990-2003/Aug 18
(c) 2003 The Cincinnati Post
File 723:The Wichita Eagle 1990-2003/Aug 18
(c) 2003 The Wichita Eagle
File 724:(Minneapolis)Star Tribune 1989-1996/Feb 04
(c) 1996 Star Tribune
File 725:(Cleveland)Plain Dealer Aug 1991-2003/Aug 18
(c) 2003 The Plain Dealer
File 731:Philad.Dly.News 1983- 2003/Aug 11
(c) 2003 Philadelphia Newspapers Inc
File 732:San Francisco Exam. 1990- 2000/Nov 21
(c) 2000 San Francisco Examiner
File 733:The Buffalo News 1990- 2003/Aug 17
(c) 2003 Buffalo News
File 734:Dayton Daily News Oct 1990- 2003/Aug 16
(c) 2003 Dayton Daily News
File 735:St. Petersburg Times 1989- 2003/Aug 17
(c) 2003 St. Petersburg Times
File 736:Seattle Post-Int. 1990-2003/Aug 16
(c) 2003 Seattle Post-Intelligencer
File 738:(Allentown) The Morning Call 1990-2003/Aug 17
(c) 2003 Morning Call
File 740:(Memphis)Comm.Appeal 1990-2003/Aug 18
(c) 2003 The Commercial Appeal
File 741:(Norfolk)Led./Pil. 1990-2003/Aug 15
(c) 2003 Virg.-Pilot/Led.-Star
File 742:(Madison)Cap.Tim/Wi.St.J 1990-2003/Aug 18
(c) 2003 Wisconsin St. Jrnl
File 743:(New Jersey)The Record 1989-2003/Aug 15
(c) 2003 No.Jersey Media G Inc
File 744:(Biloxi) Sun Herald 1995-2003/Aug 15
(c) 2003 The Sun Herald

? ds

Set	Items	Description
S1	151789	("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -PAY)
S2	11	(TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3	2	("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-ING)
S4	34	("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-)(TWICE OR MORE()THAN()ONCE)
S5	90063	(WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-Y)
S6	348701	TOLL OR TOLLS
S7	13	S2 OR S3
S8	1	S4 AND S6
S9	14	S7 OR S8
S10	14	RD (unique items)
S11	610	(S1 OR S5)(S)S6
S12	31101	(VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S13	6	S5(S)S12
S14	6	RD (unique items)
S15	20	S10 OR S14

Search Report from Ginger R. DeMille

```
? show files
File   6:NTIS 1964-2003/Aug W3
         (c) 2003 NTIS, Intl Cpyrght All Rights Res
File  63:Transport Res(TRIS) 1970-2003/Jul
         (c) fmt only 2003 Dialog Corp.
? ds

Set     Items   Description
S1        187   TOLL()(ZONE? ? OR LANE? ?)
S2      62873   ZONE? ? OR LANE? ?
S3      47177   EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
              EMOVE?
S4       1425   REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
              CE?
S5      57181   ENTER? OR ENTRANCE? OR RETURN?
S6        772   (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7          0   (S1 OR S2) AND (S3 OR S5) AND S4 AND S6
S8         16   (S1 OR S2) AND (S3 OR S5) AND S6
S9         16   RD (unique items)
? t9/3,k/all
```

9/3,K/1   (Item 1 from file: 63)
DIALOG(R)File 63:Transport Res(TRIS)

00823539   DA
TITLE: CONGESTION AND TRAFFIC MANAGEMENT
AUTHOR(S): Poole, RW, Jr
CORPORATE SOURCE: Greenwood Publishing Group, 88 Post Road West, Westport, CT, 06881- ,
JOURNAL: Contributions in Economics and Economic History   Issue Number: 224   Pag: pp 59-77
PUBLICATION DATE: 20010000   PUBLICATION YEAR: 2001
LANGUAGE: English   SUBFILE: HRIS   (H)
ISSN: 00849235
AVAILABILITY: Greenwood Publishing Group; 88 Post Road West   ; Westport ; CT   ; 06881-
ORDER NUMBER: N/A
FIGURES: 1 Fig.   TABLES: 2 Tab.

...ABSTRACT: pricing can be developed. The most successful programs thus far have high-occupancy/toll (HOT) **lanes** allowing vehicles not meeting the car-pooling requirement to purchase excess capacity in those **lanes** . The article suggests that a reform of highway finance is necessary to make road pricing...

...concludes by suggesting the following policy changes: defederalize the highway system; convert high occupancy vehicle **lanes** to HOT **lanes** ; use annual registration fees for local streets and roads; end "double taxation" of **paying** both **tolls** and fuel taxes; enact public-private partnership laws; and develop national standards for electronic tolling.

...DESCRIPTORS: Demand; Road pricing; Peak hour traffic; Off peak periods; Political factors; Congestion pricing; High occupancy **toll** **lanes** ; Financing; Automated toll collection; Technological innovations; Vehicle miles of travel; Global Positioning System; Public utilities; Federal government; Private **enterprise** ; Standards; Public private partnerships; Taxation; Registration fees; High occupancy vehicle **lanes**

```
? show files
File   2:INSPEC 1969-2003/Aug W2
         (c) 2003 Institution of Electrical Engineers
File  35:Dissertation Abs Online 1861-2003/Jul
         (c) 2003 ProQuest Info&Learning
File  65:Inside Conferences 1993-2003/Aug W3
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File  99:Wilson Appl. Sci & Tech Abs 1983-2003/Jul
         (c) 2003 The HW Wilson Co.
File 233:Internet & Personal Comp. Abs. 1981-2003/Jul
         (c) 2003, EBSCO Pub.
File 256:SoftBase:Reviews,Companies&Prods. 82-2003/Jul
         (c)2003 Info.Sources Inc
File 474:New York Times Abs 1969-2003/Aug 19
         (c) 2003 The New York Times
File 475:Wall Street Journal Abs 1973-2003/Aug 19
         (c) 2003 The New York Times
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
? ds

Set     Items   Description
S1         61   TOLL()(ZONE? ? OR LANE? ?)
S2     186669   ZONE? ? OR LANE? ?
S3     248164   EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
             EMOVE?
S4       5264   REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
             CE?
S5     500904   ENTER? OR ENTRANCE? OR RETURN?
S6        953   (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7          0   (S1 OR S2) AND (S3 OR S5) AND S4 AND S6
S8         11   (S1 OR S2) AND (S3 OR S5) AND S6
S9         11   RD (unique items)
? t9/7/all
```

9/7/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

00289760 INSPEC Abstract Number: C71016124
Title: Counting device including an escapement with no automatic return **bias**
Inventor(s): Neild, D.W.
Assignee(s): GEC Ltd
Patent Number: US 3580496 Issue Date: 710525
Application Date: 671018
Priority Appl. Number: GB 47177/66 Priority Appl. Date: 661021
Country of Publication: USA
Language: English Document Type: Patent (PT)
Treatment: Practical (P)
Abstract: Describes a counting device for use in a road **toll** charging or similar system having a counter driven by a long life clockwork type mechanism whose escapement is controlled by input means response to signals radiated by roadside sources. The mechanism is sealed in a tamper- proof casing provided with means for indicating that it is operative. The toll system may produce an incomplete half unit registration when a vehicle carrying the counting device **enters** a road **zone** which unit is completed by a further half unit registration as the vehicle **leaves** the **zone** .
Subfile: C

```
? show files
File   2:INSPEC 1969-2003/Aug W2
         (c) 2003 Institution of Electrical Engineers
File  35:Dissertation Abs Online 1861-2003/Jul
         (c) 2003 ProQuest Info&Learning
File  65:Inside Conferences 1993-2003/Aug W3
         (c) 2003 BLDSC all rts. reserv.
File  99:Wilson Appl. Sci & Tech Abs 1983-2003/Jul
         (c) 2003 The HW Wilson Co.
File 233:Internet & Personal Comp. Abs. 1981-2003/Jul
         (c) 2003, EBSCO Pub.
File 256:SoftBase:Reviews,Companies&Prods. 82-2003/Jul
         (c)2003 Info.Sources Inc
File 474:New York Times Abs 1969-2003/Aug 18
         (c) 2003 The New York Times
File 475:Wall Street Journal Abs 1973-2003/Aug 18
         (c) 2003 The New York Times
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
? ds

Set     Items   Description
S1       4472   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
                PAY)
S2          0   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
                RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
                W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
                ING)
S4          0   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
                )(TWICE OR MORE()THAN()ONCE)
S5       4095   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
                Y)
S6      17076   TOLL OR TOLLS
S7          3   S1 AND S5
S8          3   S1(S)S5
S9          0   S3 OR S4
S10         0   S6 AND S8
S11         0   S10 NOT S9
S12       179   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
                STREET OR TARMAC?)
S13         0   (S1 OR S3 OR S4 OR S5)(3S)S12
S14         0   S13 NOT (S3:S4 OR S9:S11)
S15         0   S13 OR S14
S16         3   RD S7 (unique items)
? t16/7/all
```

16/7/1 (Item 1 from file: 256)
DIALOG(R)File 256:SoftBase:Reviews,Companies&Prods.

00124244 DOCUMENT TYPE: Review

PRODUCT NAMES: Copyrights (836125)

TITLE: Steal This Column! Protecting intellectual property
AUTHOR: Blacharski, Dan
SOURCE: Computer Currents, v18 n5 p35(1) Mar 14, 2000
ISSN: 8756-0046

RECORD TYPE: Review

```
? show files
File  15:ABI/Inform(R) 1971-2003/Aug 19
         (c) 2003 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2003/Aug 19
         (c) 2003 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 19
         (c)2003 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2003/Aug 19
         (c) 2003 The Gale Group
File 621:Gale Group New Prod.Annou.(R) 1985-2003/Aug 19
         (c) 2003 The Gale Group
File   9:Business & Industry(R) Jul/1994-2003/Aug 19
         (c) 2003 Resp. DB Svcs.
File  20:Dialog Global Reporter 1997-2003/Aug 20
         (c) 2003 The Dialog Corp.
File 476:Financial Times Fulltext 1982-2003/Aug 20
         (c) 2003 Financial Times Ltd
File 610:Business Wire 1999-2003/Aug 20
         (c) 2003 Business Wire.
File 613:PR Newswire 1999-2003/Aug 20
         (c) 2003 PR Newswire Association Inc
File 634:San Jose Mercury  Jun 1985-2003/Aug 19
         (c) 2003 San Jose Mercury News
File 636:Gale Group Newsletter DB(TM) 1987-2003/Aug 19
         (c) 2003 The Gale Group
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
? ds

Set      Items   Description
S1        1010   TOLL()(ZONE? ? OR LANE? ?)
S2     1378801   ZONE? ? OR LANE? ?
S3     4486925   EXIT? OR LEAVE? OR LEAVING? OR SWERV? OR "MOVE()FROM" OR R-
             EMOVE?
S4       88463   REENTER? OR RE()(ENTER? OR ENTRY? OR ENTRANCE) OR REENTRAN-
             CE?
S5    13236319   ENTER? OR ENTRANCE? OR RETURN?
S6       25641   (CHARGE? OR CHARGING? OR PAY?)(5N)(TOLL OR TOLLS)
S7           2   (S1 OR S2)(3S)(S3 OR S5)(3S)S4(3S)S6
S8         576   (S1 OR S2)(3S)(S3 OR S5)(3S)S6
S9         576   S7 OR S8
S10          0   S9 AND IC=G06F
S11          0   S10 AND IC=G07C
S12        459   (S1 OR S2)(2S)(S3 OR S5)(2S)S6
S13        140   (S1 OR S2)(S)(S3 OR S5)(S)S6
S14         58   (S1 OR S2)(6N)(S3 OR S5)(S)S6
S15         49   RD (unique items)
? t15/3,k/all
```

15/3,K/1   (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02145765   69916478
Safety considerations in designing electronic toll plazas: Case study
Anonymous
Institute of Transportation Engineers. ITE Journal v71n3 PP: 20-24 Mar

Search Report from Ginger R. DeMille

```
? show files
File  15:ABI/Inform(R) 1971-2003/Aug 19
         (c) 2003 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2003/Aug 18
         (c) 2003 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 18
         (c)2003 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2003/Aug 18
         (c) 2003 The Gale Group
File 621:Gale Group New Prod.Annou.(R) 1985-2003/Aug 18
         (c) 2003 The Gale Group
File   9:Business & Industry(R) Jul/1994-2003/Aug 18
         (c) 2003 Resp. DB Svcs.
File  20:Dialog Global Reporter 1997-2003/Aug 19
         (c) 2003 The Dialog Corp.
File 476:Financial Times Fulltext 1982-2003/Aug 19
         (c) 2003 Financial Times Ltd
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         (c) 2003 Business Wire.
File 613:PR Newswire 1999-2003/Aug 19
         (c) 2003 PR Newswire Association Inc
File 634:San Jose Mercury  Jun 1985-2003/Aug 17
         (c) 2003 San Jose Mercury News
File 636:Gale Group Newsletter DB(TM) 1987-2003/Aug 18
         (c) 2003 The Gale Group
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
? ds

Set     Items   Description
S1     154466   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGE OR CHARGED OR -
             PAY)
S2          3   (TEMPORAR? OR MOMENTAR?)(1W)(VEER? OR LEAVE OR EXIT OR SWE-
             RVE? OR LEAVING)(3W)(ROAD OR HIGHWAY OR STREET OR TARMAC?)
S3          4   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGED)(1-
             W)(REENTRY? OR RE()ENTRY? OR REENTER? OR RE()ENTER? OR RETURN-
             ING)
S4         46   ("NOT" OR WON()T OR WILL()"NOT")(1W)(CHARGED OR CHARGE)(1W-
             )(TWICE OR MORE()THAN()ONCE)
S5     157900   (WILL OR IS OR CHARGED)(1W)(ONCE OR ONE()TIME OR ONCE()ONL-
             Y)
S6     783924   TOLL OR TOLLS
S7          7   S2 OR S3
S8          4   S4 AND S6
S9         11   S7 OR S8
S10         7   RD (unique items)
S11      1153   (S1 OR S5)(S)S6
S12     16984   (VEER? OR LEAV? OR EXIT? OR SWERV?)(3W)(ROAD OR HIGHWAY OR
             STREET OR TARMAC?)
S13         6   S5(S)S12
S14         5   RD (unique items)
S15        12   S10 OR S14
? t15/3,k/all
```

15/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

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show files
File  13:BAMP 2003/Aug W1
         (c) 2003 Resp. DB Svcs.
File  15:ABI/Inform(R) 1971-2003/Aug 20
         (c) 2003 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2003/Aug 19
         (c) 2003 The Gale Group
File  20:Dialog Global Reporter 1997-2003/Aug 20
         (c) 2003 The Dialog Corp.
File  47:Gale Group Magazine DB(TM) 1959-2003/Aug 11
         (c) 2003 The Gale group
File  63:Transport Res(TRIS) 1970-2003/Jul
         (c) fmt only 2003 Dialog Corp.
File  88:Gale Group Business A.R.T.S. 1976-2003/Aug 19
         (c) 2003 The Gale Group
File 101:Disclosure Database(R) 2003/Aug W2
         (c) 2003 Thomson Financial
File 120:U.S. Copyrights 1978-2003/Aug
         (c) format only 2003 The Dialog Corp.
File 141:Readers Guide 1983-2003/Jul
         (c) 2003 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2003/Aug 19
         (c)2003 The Gale Group
File 149:TGG Health&Wellness DB(SM) 1976-2003/Aug W1
         (c) 2003 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 163:Ageline(R) 1965-2003/Aug
         (c) format only 2003 The Dialog Corp.
File 247:ONTAP(R) Gale Group Magazine Index(TM)
         (c) 1999 The Gale Group
File 258:AP News Jul 2000-2003/Aug 20
         (c) 2003 Associated Press
File 267:Finance & Banking Newsletters 2003/Aug 18
         (c) 2003 The Dialog Corp.
File 275:Gale Group Computer DB(TM) 1983-2003/Aug 19
         (c) 2003 The Gale Group
File 340:CLAIMS(R)/US Patent 1950-03/Aug 14
         (c) 2003 IFI/CLAIMS(R)
File 348:EUROPEAN PATENTS 1978-2003/Aug W02
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807
         (c) 2003 WIPO/Univentio
File 387:The Denver Post 1994-2003/Aug 19
         (c) 2003 Denver Post
File 388:PEDS: Defense Program Summaries 1999/May
         (c) 1999 Forecast Intl/DMS
File 483:Newspaper Abs Daily 1986-2003/Aug 19
         (c) 2003 ProQuest Info&Learning
File 587:Jane`s Defense&Aerospace 2003/Aug W3
         (c) 2003 Jane`s Information Group
File 608:KR/T Bus.News. 1992-2003/Aug 20
         (c)2003 Knight Ridder/Tribune Bus News
File 609:Bridge World Markets 2000-2001/Oct 01
         (c) 2001 Bridge
File 613:PR Newswire 1999-2003/Aug 20
         (c) 2003 PR Newswire Association Inc
File 619:Asia Intelligence Wire 1995-2003/Aug 19
         (c) 2003 Fin. Times Ltd
File 621:Gale Group New Prod.Annou.(R) 1985-2003/Aug 19
         (c) 2003 The Gale Group
```

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File 622:EIU Magazines 2000-2003/Aug 19
(c) 2003 EIU Magazines
File 631:Boston Globe 1980-2003/Aug 19
(c) 2003 Boston Globe
File 634:San Jose Mercury Jun 1985-2003/Aug 19
(c) 2003 San Jose Mercury News
File 652:US Patents Fulltext 1971-1975
(c) format only 2002 The Dialog Corp.
? ds

Set Items Description
S1 89 (CHARGE? OR CHARGING OR PAYING OR PAY OR PAYS OR PAID OR DEDUCT? OR DEBIT?)(3W)(TWICE OR SECOND OR TWO OR AGAIN)(S)TOLL??(S)(ZONE? OR LANE? OR SWERV? OR RANGE)
S2 77 RD (unique items)
? t2/3,k/all

2/3,K/1 (Item 1 from file: 13)
DIALOG(R)File 13:BAMP

1268203 Supplier Number: 03500484 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Valuing flexibility in private toll road development: analysis of the Dulles Greenway.
(uncertainty and choice of timing can alter an irreversible capital investment decision)
Article Author(s): Wooldridge, Stephen C; Garvin, Michael J; Cheah, Yuen Jen; Miller, John B
Journal of Structured and Project Finance, v 7, n 4, p 25(12)
January 2002
DOCUMENT TYPE: Journal (United States)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 6950

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:
...a certificate of authority in 1990.

Project scope and financing. Under TRIP II, the Dulles **Toll** Road extension became the Dulles Greenway Three years of planning, design, and arranging financing resulted in the state's approval of a four- **lane** , limited-access highway with seven inter- **charges** . **Two** future interchanges would be added when traffic volume reached appropriate levels. Located within 250 feet of right of way, the project was designed to accommodate future **lane** expansion. Electronic **toll** collection technology was included in the design to maintain steady traffic flow. The project originally...

2/3,K/2 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02343083 113734282
Lee County's variable pricing project
Burris, Mark W; Swenson, Chris R; Crawford, George L
Institute of Transportation Engineers. ITE Journal v72n4 PP: 36-40 Apr 2002
ISSN: 0162-8178 JRNL CODE: TE